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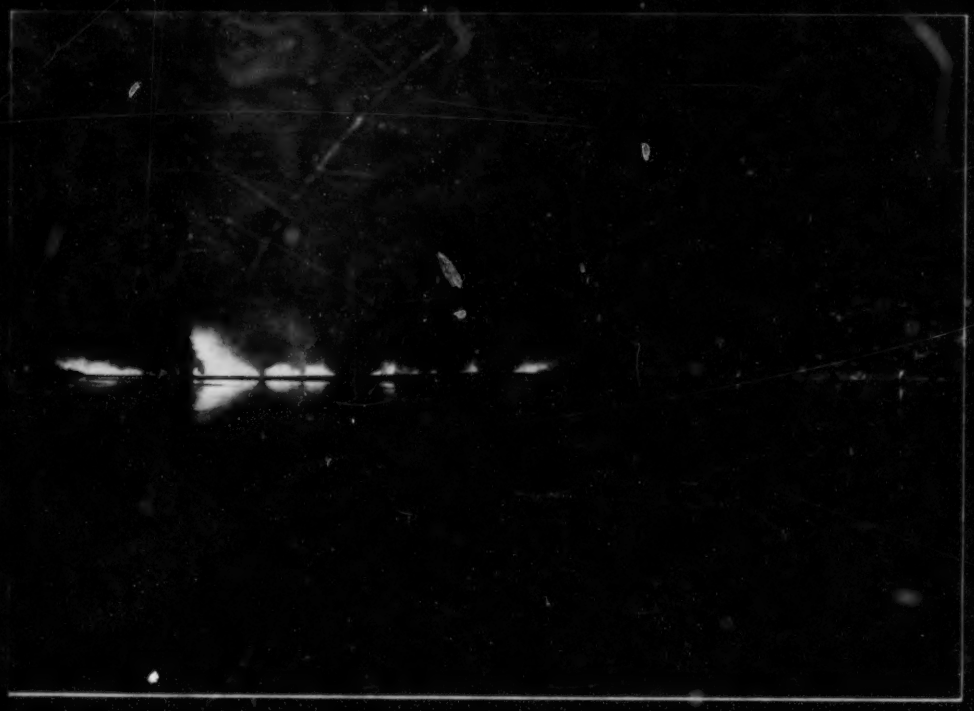

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WITHOUT EXCEPTION ALL [AIRPORT] INSTALLATIONS HAD BEEN COMPLETELY PLUNDERED AND MANY VANDALIZED. THE LOSS OF EQUIPMENT AND SPARE PARTS IS OF STAGGERING PROPORTIONS ... WHILE THE STRUCTURAL DAMAGE TO BUILDINGS IS SIGNIFICANT, IT DOES NOT APPROXIMATE THE EQUIPMENT LOSS, WHICH HAS BEEN ESTIMATED BY THE KUWAIT AIRWAYS CORPORATION TO BE IN THE ORDER OF $250 MILLION.

6 ELECTRICITY, TRANSPORT AND COMMUNICATIONS

ELECTRIC POWER AND GAS

Situation before 2 August 1990

226. Electricity in Kuwait was supplied from five major power stations. One of these is located at Zawr (2,511 megawatts), two at Shuaiba (1,134 megawatts) and two at Doha (3,558 megawatts) (see map 5). A sixth but considerably smaller power station (195 megawatts) is located at Shuwaikh inside Kuwait City. This station was commissioned in the 1950s. The other stations are comparatively new, having been commissioned in the 1980s.

227. The power stations had a cumulative installed capacity of 7,400 megawatts, meeting a peak load of about 4,000 megawatts in 1990. Electricity generation is based mainly on oil-fired steam turbines. Only a small part, 400 megawatts, is based on gas turbines and provides stand-by capacity.

228. Each power station has a desalination plant. When fully operational, these plants had a combined desalination capacity of close to 250 million gallons of water a day.

229. The power is transmitted on 300-kilovolt and 132-kilovolt transmission lines from the power stations to substations adjacent to the consumption centres in Kuwait City and other areas. Several 300-kilovolt transmission lines run from Zawr via Kuwait City to Doha. The total length of these lines is 335 kilometres. The 132-kilovolt overhead transmission network has a total length of 1,150 kilometres. The length of the 33-kilovolt overhead network from the substations is 1,330 kilometres. The underground cable network consists of 3,500 kilometres of oil-filled cables and 20,000 kilometres of lower-voltage cables.

230. A large number of substations transform and distribute the power to the consumers. There are 13 substations on the 300-kilovolt level and 295 on the 132- and 33-kilovolt levels. There are approximately 7,000 substations on lower voltage levels.

231. Before 2 August 1990, the electricity system in Kuwait had a tremendous generating capacity. It had a variety of transmission and distribution alternatives, which made the supply extremely reliable. The system had modern equipment and was monitored and controlled from a remote-control centre in the National Control Centre building. Its staff at that time had a strength of 11,000 employees.

232. The administration buildings for the Ministry of Electricity and Water are located at Kuwait City, as are the central stores, workshops and transportation centre. A modern computer centre was housed in a separate building.

233. Part of the energy used in buildings and residences has been provided by gas. Although most of the domestic supply of gas was bottled, a gas distributor pipeline system supplied institutions such as schools, hospitals, military camps, government buildings, catering facilities and bakeries. Gas was delivered from KOC and distributed by the Ministry of Energy and Water. Most of the distribution network is through underground pipes in Kuwait City.

Assessment of damage

234. The mission visited and inspected all the major stations principally responsible for power production.

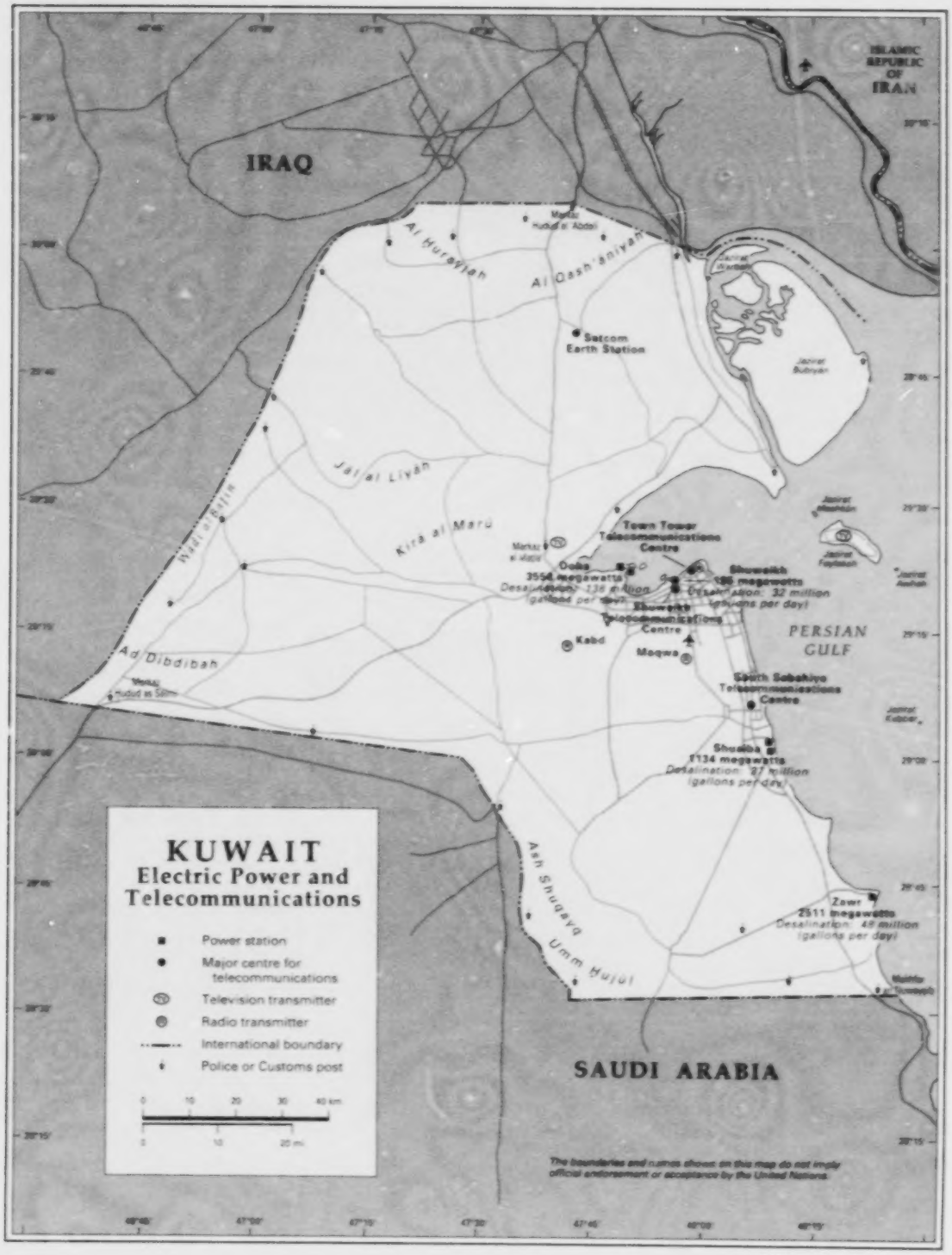
235. The Doha East and Doha West power stations were blown up and largely destroyed. Six of the eight big oil tanks at these stations have also been destroyed. Other damage is less severe and can be repaired. None the less, these two stations need reconstruction of their control rooms and oil tanks and repair of other less damaged equipment before they can become fully operational. Doha West power station could run partially despite the destruction of the electrical control room. The desalination plants have suffered no apparent harm.

236. Severe damage also occurred at the Shuwaikh power station. Because of its relatively advanced age and low generating capacity, there is a possibility that the station will have to be abandoned, as will its desalination plant.

237. The Zawr power station and desalination plant was found undamaged. It could be set in operation as soon as the transmission lines are repaired. The Shuaiba South and North power stations and desalination plants have suffered severe damage to their transformers, but little damage has been inflicted upon the stations themselves. Once the damaged transformers are replaced and minor damage repaired, the stations can become fully operable again.

238. Of the original 7,400 megawatts generating capacity, it is envisaged that 3,000 to 3,500 megawatts could be reinstated once

MAP 5



MAP NO. 3831.4 UNITED NATIONS
APRIL 1991

the transmission lines are repaired. This generation capacity appears to be sufficient for meeting the expected load in the current situation.

239. There is however an important caveat. Since the system has been shut down for several weeks and has suffered from lack of maintenance, the re-establishment of a stable power supply may take several weeks. Re-establishment of full capacity will take much longer, probably two years at the least.

240. The total damage to the power stations is assessed to be in the order of 5 per cent of the replacement value of existing plants. This assessment excludes the value of the Shuwaikh station, because of its age.

241. The damage to transmission lines appears to have been caused by gunfire. It caused thousands of cuts to conductors and also damaged isolators. A very small number of towers also suffered damage.

242. The conductors are already in the process of being repaired and partly replaced. This repair will be completed in a few weeks. Some lines had, in fact, been brought into operation by the time the mission departed. The repair costs are assessed to be in the order of 5 per cent of a completely new line transmission system, including towers.

243. It must be stressed that the current repair work is an emergency measure. It may be necessary to change the conductors at a later date, but this can not be decided upon until the lines are tested. Should change be required, the damage assessment would rise considerably.

244. The mission inspected five out of the six main 300-kilovolt substations that were reported to have been damaged. The damage ranged from the total destruction of all the transformers to minor debris penetration. Little harm was observed to other parts of these substations.

245. Some 25 of the 295 substations, on the 132-kilovolt and 33-kilovolt level, were reported to have suffered damage. The mission inspected eight of these. Here again, the damage extends from, in some cases, total destruction of the whole station, including buildings and structures, to minor debris penetration in others.

246. The telecommunication equipment for most of the substations has been put out of commission. Consequently, the stations cannot be operated by remote control from the control centres, but have to be operated manually from the control rooms in each station. The majority of substations throughout the country on lower voltage levels seem to have experienced very light damage. None of the stations observed or inspected was visibly affected. The total damage to these substations is assessed to be in the order of only 5 per cent of all their replacement value.

247. The comprehensive underground cable network cannot be fully tested until power is restored. There seems, however, to be moderate damage, although it has not been possible to investigate the effect from tanks and other heavy vehicular traffic, as well as the digging of trenches and bunkers. In addition, the lack of maintenance on the oil cables for seven months could affect the operational efficiency of the network. The total damage to the underground cable network, while difficult to assess, is probably less than 5 per cent.

248. Despite the damage inflicted upon the substations and the underground cable network, the system is so comprehensive and resilient that power supply to consumers may be re-established relatively soon, although some areas will not have power restored until adjacent substations have been repaired. Reinstatement of the whole system could take a year or more.

249. The main loss to the administrative buildings is attributable to extensive ransacking and vandalism. In the premises visited, all computers and office equipment and supplies had been taken. The new computer centre at the Kuwait Ministry of Electricity and Water had been ransacked and stripped completely of all its equipment and furnishing. Structural damage is relatively moderate, except for some fire damage to the main office premises.

250. Three quarters of the contents of the main store have been lost. Removal of spare parts and equipment is reported to have been systematic. Mission members were told that the looting started in early August and lasted for four months. The loss from the main workshop was said to be almost total. Out of 1,200 government cars (light vehicles), 900 were removed; of 800 hired cars, 600 were stolen (more than four fifths); and 85 per cent of heavy equipment such as cranes, trucks and loaders had been removed.

251. The total loss from looting of stores, workshops and garages is in the order of 70 to 90 per cent. Until new equipment and supplies are provided, there will be a considerable obstacle to the smooth operation of the electricity system.

252. The Ministry of Energy and Water informed the mission that no visible damage has been observed to the gas-distribution pipeline network, which is mainly underground. It has however been without maintenance for eight months. Since there was still no gas supply at the time that the mission was in Kuwait, the mission was unable to test for leakages.

253. The damage inflicted on the entire electricity system is assessed to be in the order of 5 to 7 per cent of the value of a new system, including the reconstruction of stocks, transport equipment and other facilities. Presuming that the cost of a new system, such as that of Kuwait, would amount to close to $18 billion, the cost of re-establishing the system to a pre-invasion status would be in the order of $0.9 to $1.3 billion.

254. A complete return to normalcy could prove more costly and might exceed the upper limit. Additional repairs might be necessary when the system is fully tested, in particular to the transmission lines and oil-filled cables.

255. A serious problem may be experienced in the operation and maintenance sector owing to a seriously depleted stock of spare parts, inadequate transport facilities and a vast shortage of human resources. Of 11,000 employees in the sector before the invasion, only around 1,000 are left today. The majority of the engineers, technicians and other professionals who played so crucial a role in the daily operation of the system have left Kuwait.

256. Virtually every sector of civic and social activities, such as water supply, sewerage, health care, education and water production is sustained by electricity. Its temporary absence in Kuwait has considerably retarded the re-establishment of normal life. While power to supply current needs can be reestablished in a matter of weeks, it is estimated that to restore the system as it was before the invasion would take at least two years.

TRANSPORT

A) ROADS AND BRIDGES

Situation before 2 August 1990

257. Kuwait has a well-developed system of motorways, ring roads and city streets serving all urban areas, with a total of nearly 300 kilometres of multilane motorways and 3,500 kilometres of other paved roads. Three dual-carriageway motorways lead to the borders with Saudi Arabia and Iraq. All roads are sealed with asphalt and the motorways are constructed to very high standards. The system includes interchanges and flyovers at each intersection of the major roads. The motorway system was in the final stages of completion in mid-1990.

258. The Roads and Bridges Department has five divisions: four are responsible for the north, south, west and central areas of the country, while the fifth is devoted to motorway maintenance and road testing and research. All road and bridge construction, as well as nearly 80 per cent of the maintenance work, is handled by contract. Many of these contracts were being fulfilled at the time of the invasion.

259. Kuwait City had most of its intersections controlled by traffic lights, although most were uncoordinated. Some major radial and ring-road intersections were coordinated for "green wave" operation by linked automatic controls.

Assessment of damage

260. The mission inspected Kuwait City streets and main radial ring and roads as well as the Al Safr Motorway and Al Fahaheel Expressway to the Saudi Arabian border. The inspection of the Jahrah motorway and major north road to Iraq was done by aerial survey. Nearly 15 kilometres of the dual carriageway close to the border with Saudi Arabia at Nuwaysib has been ripped and trenched, and 5 kilometres on the main highway west of Jahrah has been severely damaged (see map 6). Extensive resheeting of the asphalt surface will be necessary and the damaged sections on the south and west highways will require complete reconstruction. It is possible that the highway leading north and almost half of the city's ring/radial system will also require sections of pavement overlay. There has been some random, but repairable, cratering from shell-fire, tanks and bombs on the motorways and substantial cracking of the pavement and stripping of asphalt from overweight traffic. However, over all the system appears to have stood up well to the unusually heavy loads, which is a reflection of its high standard design. The long-term effect on the road pavement and subgrade from the abnormal loads can be assessed only after closer and more detailed inspection and analysis of samples.

261. Except for the surface course, the city streets and arterials are in good condition and will need little rehabilitation except for the removal of obstructions (such as 1,800 broken down or stripped vehicles) and replacement of signs. There has been substantial destruction of paved footpaths and median strips by the invasion forces to provide materials for strengthening fortifications. This is especially noticeable along the waterfront and has also led to the destruction of roadside walls.

262. Two 30-metre spans of the multispan concrete Bubiyan bridge have been destroyed, but they can be replaced, though at considerable cost. Moderate-to-severe structural damage has occurred to two interchange prestressed concrete bridges close to Jahrah and one interchange bridge close to Ahmadi. There is little other damage to most other interchanges and bridges except for some pocking of concrete by bullets and shells on the north and south expressways. The damage inspected of this type was minor and repairable.

263. The complete road system is however handicapped by a lack of regular maintenance. The nearside lane and the formed shoulder on multilane roads are covered in sand. Many culverts are blocked, road markings have faded and a significant amount of the road "furniture" (such as signs and guard rails) is damaged or missing.

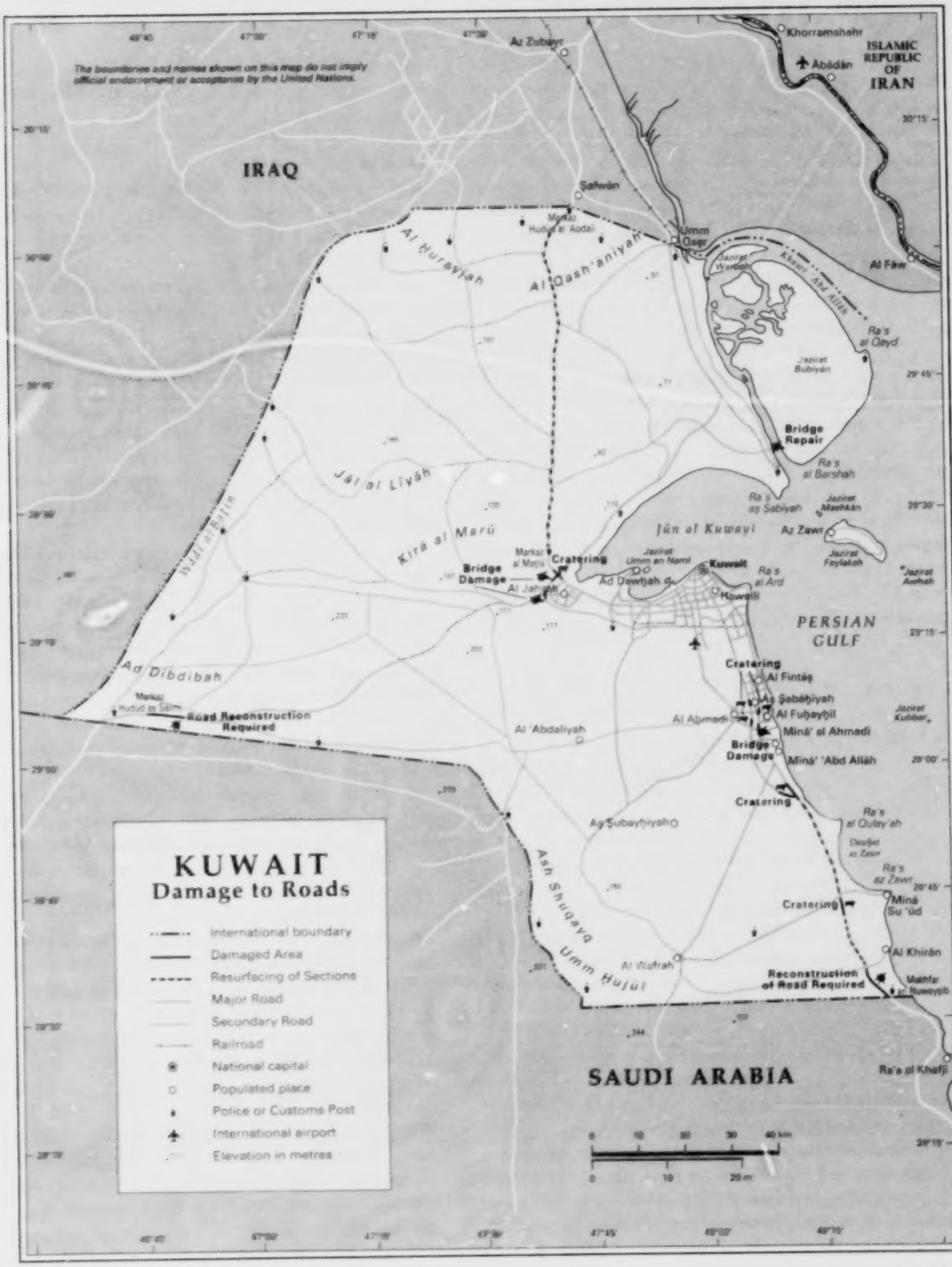
264. The mission also inspected district offices and depots (Nos. 2 and 3), the Road Research Laboratory, the Bridge Maintenance Office and depot, the Road Maintenance stores and depot and the Department's asphalt plant complex. In all cases the depots and laboratories had been stripped of all equipment and materials, spares, vehicles and office furnishings. Structural damage was minimal and all permanent structures are sound.

265. The Department's asphalt complex consisted of an asphalt plant and an asphalt recycling plant with a combined capacity of 200 tons an hour, a bitumen emulsion plant and a concrete-coating plant. All four plants had been removed in their entirety during the occupation period. There was some minor structural damage from bullet- and shell-fire and the prefabricated plant control building had been partially destroyed. It is reported that at least two asphalt plants belonging to contractors had also been removed.

266. The Road Research Laboratory contained much state-of-the-art equipment and testing systems. All had been removed as had all furnishings. The structure itself was sound.

267. All manuals, books, documents, plans and data had been either taken or vandalized at all locations.

268. An inspection was also made of two construction areas. The South Surra Residential Estate was in the early stages of construction in August 1990 and preliminary excavation had begun. All



MAP NO. 3631.3 UNITED NATIONS
APRIL 1991

of the contractor's plant was removed and the site offices destroyed. As the construction area was also used by the invasion forces for trenches and bunkers, the excavation work was destroyed.

269. A contract had been concluded in early 1990 for the dualling of the Mina al-Wafra road and the contractor had been mobilized. An inspection showed that all the plant had been removed and the site offices destroyed.

270. The mission undertook a general inspection of the traffic-light system and noticed that many automatic traffic-light controls had been removed and others damaged. It was noted that some poles were damaged and heads removed. A random sample carried out by the mission indicated that 10 per cent of all controls and 5 per cent of all heads had been removed or destroyed but that figure could be an underestimation as the complete damage can be ascertained only once power is restored to the whole system.

271. The Kuwaiti authorities have compiled a list of plant and other items that belonged to the depots and sites visited by the mission. These lists have been examined and the items listed are considered reasonable for the standard of the facilities visited.

272. The main loss in this sector has been of construction and maintenance equipment belonging to the Government and private contractors, as well as that of road-building material production equipment and testing and research equipment. The major portion of the basic structure of the road and bridge system is on the whole sound, but does require immediate maintenance and minor, but essential, repair.

B) PORTS

Situation before 2 August 1990

273. Kuwait has traditionally been an important centre for ship movement and marine activities. It has three commercial seaports, Shuwaikh, Shuaiba and Doha, all under the Ports Public Authority. Shuwaikh, established in 1960, is the oldest commercial port. It has 21 berths with a total length of 4 kilometres. In 1986 a total of 1,196 ships docked at Shuwaikh, discharging 3 million tons of goods. The port has two berths reserved for container loading, with a container inspection station on 22,000 square metres. A ports complex was constructed recently. It has Ports Public Authority offices, agents offices, a multistorey carpark and other government offices. The complex, which cost $30 million, had not yet been officially opened at the time of the invasion.

274. The second largest port is the Shuaiba commercial port, built in 1967. This port has 20 berths plus two docks for small ships, with a total length of 4 kilometres. Shuaiba port also has a new container terminal (1982) with four deep-water (14 metres) berths. The terminal possessed cranes and specialized container-handling equipment. It had a maximum handling capacity of 400,000 twenty-foot equivalent units (TEU) containers a year. The port mainly serves the Shuaiba Industrial Area and the oil refineries.

275. The third commercial port is at Doha, commissioned in 1981 for small coastal ships carrying light goods. It has 20 small berths, each 100 metres long, with a draft of about 4 metres.

Assessment of damage

276. The ports of Shuaiba, Shuwaikh and Doha were inspected by the mission.

Shuaiba Port

277. Shuaiba Port (see map 7) has suffered extensive damage to its loading equipment and all moveable equipment has been looted. The port was in very limited operation at the time of the visit of the mission.

278. The road access to the port is undamaged except for moveable obstructions. The main channel access has been checked for mines and found to be safe.

279. Four ships and barges had been sunk in the barge harbour and small boat basin. Four belonged to the Ports Public Authority and one to Iraq. At the time of the mission's visit one of the vessels still had to be removed. In the main harbour a ship moored at berth No. 12 has been gutted by fire and blocks the berth, while a coastguard ship is lying damaged at berth No. 11. The small boat harbour is polluted with oil to a depth of one inch on the surface.

280. Most warehouses are structurally intact but have been completely looted. There is moderate structural damage to a seamen's recreational building and an adjacent workshop as well as to a fire-fighting building close to the small boat harbour. The United Fishing Company's office and processing plant has sustained minor structural damage, mainly to the roof, and severe structural damage has been incurred by the offices of another small fishing company. Outside the port area there is moderate structural damage to the main Ports Public Authority offices. This can be repaired.

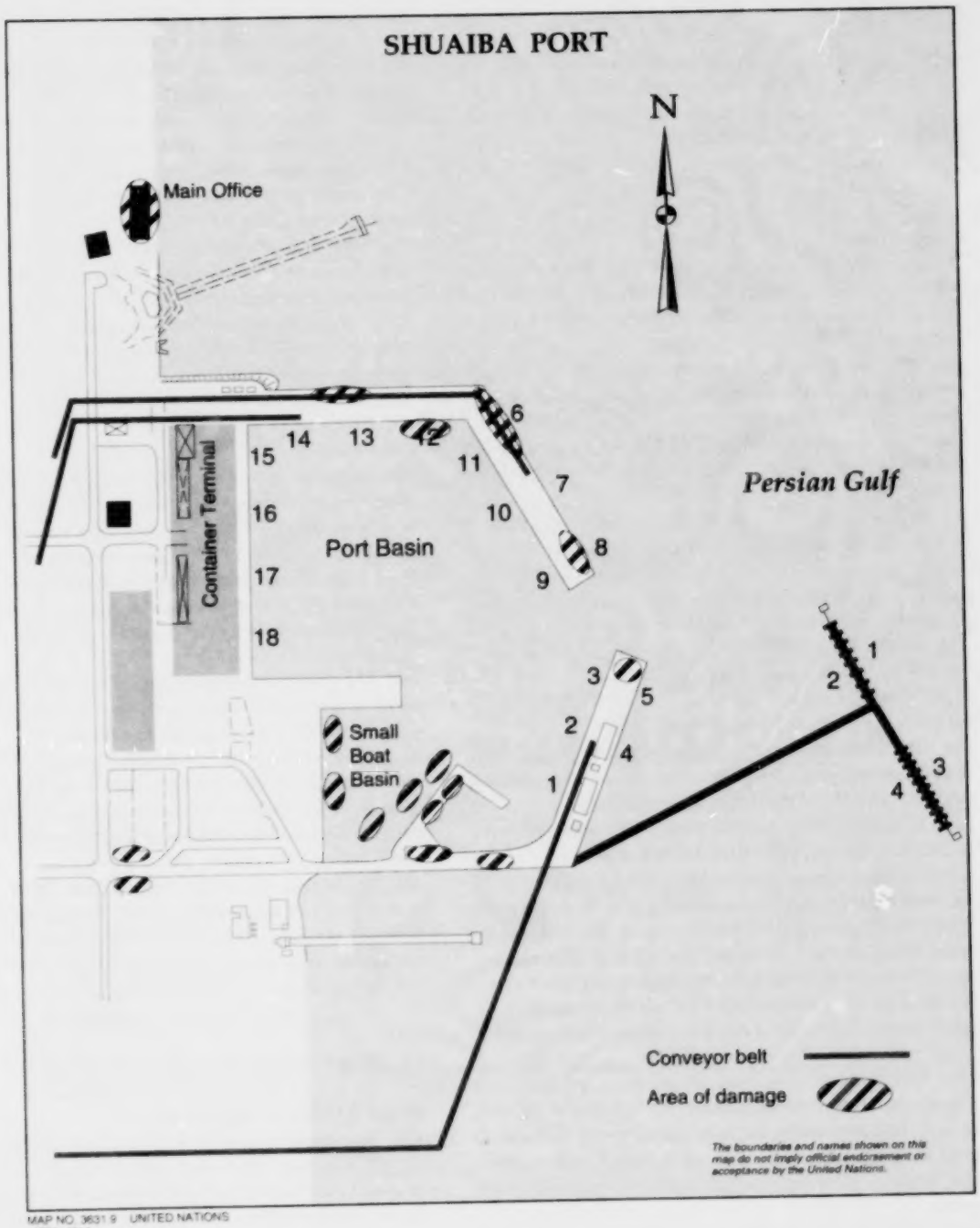
281. All buildings, warehouses, workshops, stores, offices, the communication tower, the firehouse, security buildings, gate houses, Shuaiba Area Authority buildings and contractors' buildings have been stripped of all moveable equipment and there is extensive damage to furniture and fittings. Most of the files and records are also missing or destroyed.

282. There is severe damage to the main bogey wheels of the container gantry crane at berth No. 18. Repair will be difficult and expensive. There is damage to the controls of some of the other gantry and mobile cranes but the full extent could not be determined. All the original forklift units are damaged or missing.

283. Two cement-loading units at berth No. 8 have been destroyed. The sulphur conveyor and loading unit is moderately damaged and burnt.

284. Most open storage areas, including the empty container park, the container inspection area and the main harbour open storage area, are relatively undamaged, with some minor cratering from shells or rockets. There is also some minor damage to the barge harbour wharf.

MAP 7



MAP NO. 3631.9 UNITED NATIONS
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285. At the time of the visit of the mission, Shuaiba Port was in partial operation although no loading or unloading equipment was operable.

286. No information was available from the Ports Public Authority during the visit on the number or type of ships that were berthed in the harbour on 2 August 1990 and are now missing.

287. A list of missing equipment at Shuaiba Port has been submitted by the Ports Public Authority. This has been checked for reasonableness and the total estimated cost of over $70 million is considered to be in the correct order.

Shuwaikh Port

288. Shuwaikh Port (see map 8) has suffered severe damage to its loading equipment, offices and closed storage areas. The main channel and many berths are blocked and the port is at present inoperable.

289. The road access to the port is undamaged and all roads within the port are clear except for obstructions, barbed wire and debris.

290. The channel, main port and other basins are being cleared of mines and other obstructions, of which there are an unknown number.

291. There are at least two boats sunk in the small boat harbour as well as a number of ships in the following berths: berth No. 7: a very large cement factory ship; berth No. 8: two ships; and berth Nos. 13 and 16: one ship each. The cement ship in particular will be very expensive to move. There are numerous small craft sunk in the coastguard and fire-fighting harbour. Cranes have been toppled into the harbour at berth Nos. 11 to 15 and 17.

292. As the harbour was still being checked, the full extent of the blockages could not be ascertained.

293. The administration offices close to berth No. 5 have severe structural damage and will have to be demolished. The warehouse near berth No. 11 and the livestock terminal (berth Nos. 19 and 20) both have moderate structural damage. The warehouses near berths 2 to 5, the marine offices and the customs, health and anti-pollution offices all have minor structural damage. All these buildings, with the addition of the main administration block, the stores, agent offices, pilotage, recreational buildings and container terminal offices have been ransacked and looted of all equipment.

294. The new Ports Public Authority complex at the port entrance has minor structural damage to the wall façade but appears structurally sound. The inside of this complex was not inspected. It is understood that it has not yet been fitted or furnished.

295. Most buildings in the Kuwait Shipbuilding and Repair Yard Company have been looted and burnt, in particular the main offices. The cranes and repair docks appear sound, although all other equipment is missing and presumed looted. A close inspection of this area was not possible because of security considerations.

296. Twelve gantry and straddle cranes have been felled and are beyond repair. Eight gantry and straddle cranes are damaged or burnt; it is unlikely that more than six can be repaired. All other loading equipment, including floating cranes, mobile cranes and forklifts, are missing.

297. The flour mill unloading intake is moderately damaged (50 per cent); repair is possible.

298. Most open areas appear undamaged except for some minor cratering from shells and rockets and general debris. There is some damage to the wharf in the small craft harbour and minor burning of mooring timbers in other areas. The open storage areas appear undamaged although the container storage and truck park is full of over 1,000 stripped, damaged and gutted trucks, tankers, cars and other vehicles.

299. No information was available from the Ports Public Authority on the number or type of ships that had been berthed or moored at Shuwaikh Port on 2 August and are now missing. At the time of the mission Shuwaikh Port was in the process of being cleared of explosives and mines. The Ports Public Authority had not therefore been able to carry out an inventory of equipment and material loss.

Doha Port

300. Doha has not yet been fully checked for obstructions, although no mines have been reported. At least six ships (dhows) have been sunk; there may be others. One warehouse has been demolished, all other buildings are structurally sound. All buildings had been ransacked and plundered. There was no loading equipment on the wharves except for some small mobile cranes. The road access to Doha Port is undamaged as are all the internal roads.

301. The Ports Public Authority has not yet carried out an inspection of the Port and therefore no equipment inventory is available.

302. In summary there appears to have been moderate to severe damage at Shuwaikh, moderate damage at Shuaiba and minor damage at Doha. The main areas of damage are obstructions in the harbour and damage to loading equipment. When the harbours have been cleared and power restored, however, all ports could quickly resume partial operation.

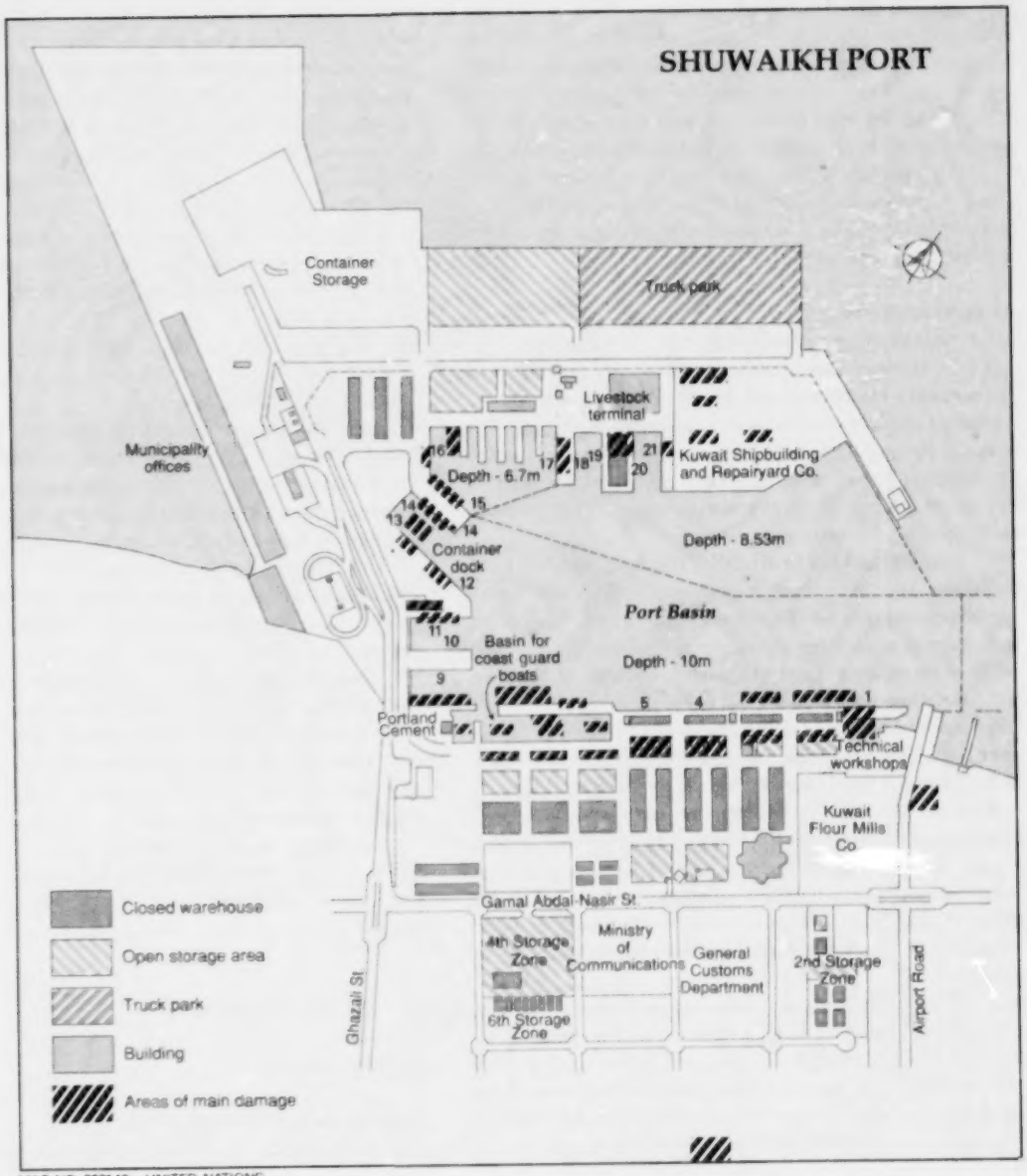
303. The Ports Public Authority has estimated that the total losses in this sector will be around $1 billion. Considering the damage to the infrastructure of the ports and the equipment loss, this figure appears to be in the correct order of magnitude. There will also be loss of revenue while the ports are being restored.

C) KUWAIT INTERNATIONAL AIRPORT

Situation before 2 August 1990

304. Kuwait International Airport, which commenced operation in 1961, is situated on the west side of Kuwait City. It has two runways (3,400 metres and 3,500 metres) and is capable of accommodating all modern international aircraft. It has two terminals: terminal No. 1 is the older and is average by modern standards; terminal No. 2 was recently completed at a cost of $126 million and possessed the latest equipment and facilities for the

MAP 8



MAP NO. 3631.10 UNITED NATIONS
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processing of passengers and automatic baggage handling, including a modern security-checking system. Terminal No. 2 has a total of 12 gates with direct access to aircraft and individual departure lounges. Both terminals have adequate ground access gates. The terminals also accommodated shops, banks, VIP lounges, a duty-free area, cafeterias, a prayer room and staff facilities.

305. The airport had a modern system of navigational aids and aircraft control and a modern fire and emergency service. The Airport Transit Hotel (200 rooms) is located on the airport perimeter. In June 1990 the airport had an aircraft movement of 2,944, a passenger movement of 57,700 and a freight movement of 4,145 tons incoming and 3,294 tons outgoing.

Assessment of damage

306. The Kuwait International Airport and all its facilities were inspected by the mission. It was noted that extensive looting of all equipment has been carried out. This includes navigational and communication equipment, runway lighting, television monitors and computer terminals, X-ray machines, stores and shops, furniture and fittings. All of the mobile equipment and vehicles are missing. There was also extensive damage to some structures by fire and explosives (see map 9).

307. Terminal No. 1 has been severely damaged by both fire and explosives. The single storey main steel-frame structure is seriously buckled in places. This, and the prefabricated nature of the terminal, will require the demolition of the terminal. Although much of the equipment and fittings has been removed, there are a significant number of items that could be salvaged.

308. Terminal No. 2 is a reinforced concrete structure and, while there has been moderate fire damage, the terminal can be rehabilitated. There has been extensive looting on the ground side, including the removal of one complete check-in counter and severe burning of one section, causing damage also to the services located in the ceiling. On the air side, most airbridge gates have been damaged but can be repaired, although six have been badly burnt. The plate glass, fittings, indicator boards and monitors and antiquities in the display cases have been largely destroyed or removed.

309. There has been some fire damage in the arrivals hall, including the complete gutting of three baggage conveyors. This fire also destroyed the main electrical and control cabling in the ceiling. The VIP lounges have been completely stripped. Other areas that have been damaged and completely plundered include the meteorological office, the briefing office, the marshalling office and three stores. There has been about 20 per cent damage to the plant equipment in the basement. All airport offices have been completely robbed of equipment, furniture and furnishings, including carpets and curtains. The total damage to the terminal is estimated at 20 per cent of the total cost of the terminal.

310. Both the Ministerial and Emir VIP lounges have been completely gutted by fire and explosives; these will have to be rebuilt.

311. There has been damage to and pillaging of equipment at all radar installations to the extent that all are at present inoperable. The search and surveillance radar installation has moderate structural damage from shell-fire. Repair may be possible but it needs more detailed inspection. There has been about 20 per cent equipment damage to the primary radar but the structure is undamaged. All equipment has been removed from the ground radar installation, but here also the structure is undamaged.

312. While the main control tower is structurally undamaged, its main control cabin was severely burnt and all equipment destroyed.

313. The radar and communications control tower, which contained all radar and very high frequency (VHF) control equipment, has been completely gutted by fire. Equipment that has survived theft has been destroyed. It is probable that this tower will have to be demolished.

314. There has been damage to one runway (500 metres of runway 33L) by cluster bombs. This section is at present unusable, although it can be repaired.

315. Most of the lighting system was removed from both runways, including runway lights, approach lights, threshold stop bars and handling point lights. Other destruction included that of two integrated landing systems (ILS), two glide path and two localizer navigational lights and markers and an electrical substation. The Jocal and Wafrah visual omni-directional radar (VOR) navigational (radio) installations were also destroyed as was a non-directional beacon (NDB) navigational installation. The airport security building was also severely damaged.

316. Two airplanes were destroyed on the tarmac, a Kuwait Airforce transport plane and a British Airways Boeing 747. There is some consequent damage to the western apron.

317. Over all, the airport has suffered extensive equipment loss and damage as well as moderate structural damage from both fire and shelling. Most of the runway, taxiway and tarmac areas are undamaged and the main terminal can be rehabilitated. There will need to be extensive repair and replacement of navigational and central equipment before the airport can begin basic operation.

D) TRANSPORT SERVICES

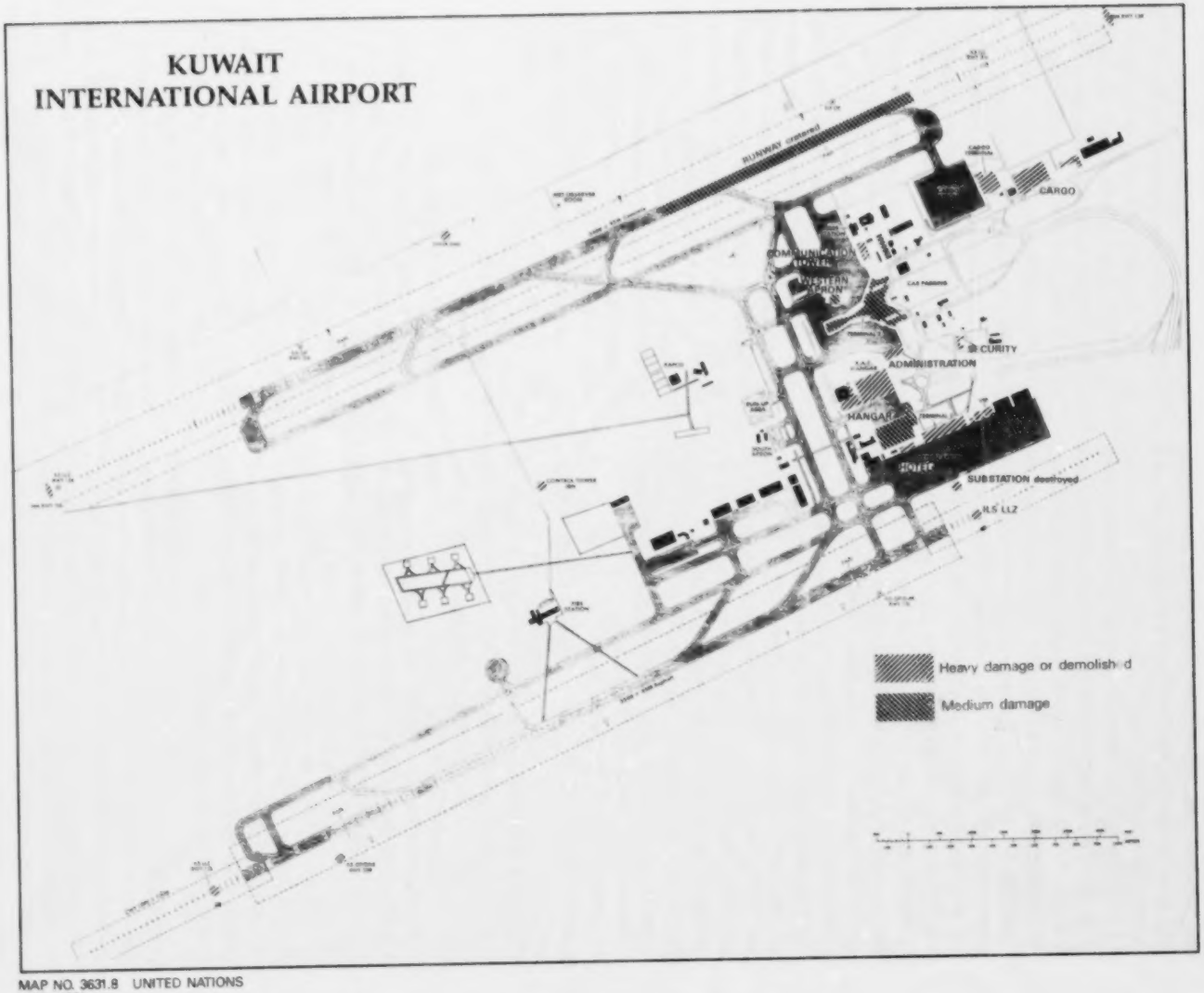
Surface transport

Situation before 2 August 1990

318. Public transport in Kuwait is run by the Kuwait Public Transport Company. It provides passenger transport services, student transport services, services to Saudi Arabia and other countries, maintenance and repair of most government-owned cars, except for the Ministry of Defence, and management of the ferry services.

319. In early 1990 the Kuwait Public Transport Company had 1,280 school buses, 753 public transport buses and 148 buses for special services. About a third of these buses were air-conditioned and each had around 40 seats on the average. The public transport buses ran on nearly 60 routes throughout Kuwait.

KUWAIT
INTERNATIONAL AIRPORT



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MAP 9

carrying nearly 300,000 passengers a day. In addition, the Kuwait Public Transport Company was responsible for the repair and maintenance of 4,200 vehicles used by the Ministry of the Interior, including all the police vehicles and a further 2,850 vehicles used by other government ministries.

320. The Kuwait Public Transport Company operated two main public transport terminals and various bus turn-around stations at the end of some routes. The new main terminal, built at a reported cost of over $5 million, has 18 bays, a small garage and a large terminal building with shops and cafeteria. The old terminal also contains the main office block of the Company.

321. The Kuwait Public Transport Company has six garages for the maintenance and minor repair of the public transport fleet and government vehicles. It also has a new main workshop and training centre in its Technical Affairs Division in Sulaibiya. The workshop and stores, covering a 15,000-square-metre area, contained state-of-the-art repair equipment, including that for tyre retreading, engine boring and electronic tuning. The facility also had a dormitory block capable of accommodating up to 500 staff.

322. The marine section of the Kuwait Public Transport Company operated the shuttle passenger service between Faylakah Island and Ras al-Ard, using modern hovercraft and car ferries. The company had a total fleet of 11 ferries and carried over 570,000 passengers and nearly 10,000 vehicles each year. It had its main marine offices at the Ras al-Ard terminal.

323. The total number of vehicles registered in Kuwait in 1989 exceeded 560,000; 75 per cent of these were private cars.

Assessment of damage

324. The mission inspected the Kuwait Public Transport Company main offices, both bus terminals, two of the six garages, the main workshop and training centre, two bus receiving depots and the Ras al-Ard ferry terminal. Without exception all buildings had been plundered and vandalized. Equipment and furnishings were removed or damaged and much of the records and operating data was lost.

325. The main workshop and stores and all garages and terminals were also completely and systematically stripped of all equipment, machinery and spares. The loss at the main workshop was immense as the facility was highly capitalized with high-standard equipment and tools and a large stock of spares.

326. In the main Kuwait Public Transport Company offices, about two thirds of the equipment and nearly half of the furnishings were missing. The main computer, however, appeared to have suffered only minor damage. All facilities were found to be structurally sound.

327. Of the total vehicle fleet maintained by the Kuwait Public Transport Company, less than a fifth remains, the majority of it damaged or stripped of parts. This constitutes a loss of over 7,500 buses and other vehicles, including nearly the entire police car fleet. The remaining vehicles, heavy machinery and workshops have suffered severely from a lack of maintenance during the period of the Iraqi occupation.

328. The marine terminal has been looted of most of its equipment and vandalized, but it is structurally sound, as are the berths and pier. The three car ferries appear to be only slightly damaged but the whereabouts of seven of the eight other passenger ferries are unknown. The eighth ferry was discovered during a mission inspection of Shuwaikh Port, but its condition could not be assessed. The total cost of the seven missing ferries is reported to be in the order of $4 million.

329. All of the Kuwaiti Petroleum Company's fleet of 22 oil tankers were reported to have been outside Kuwaiti waters at the time of the invasion and therefore remained undamaged.

330. Losses to the private truck fleet could not be ascertained as the majority of owners were absent from the country. However, it was indicated that they are likely to be of a similar order to that of the government sector, i.e. about 80 per cent.

331. Similarly, the total losses of private cars could not be ascertained. It is known that many cars were extensively looted, especially those that had been parked in the open. The mission saw thousands of stripped and damaged cars, many unrepairable, on streets, roads, parking lots and open spaces in Kuwait City and during visits to outlying areas. At Shuwaikh Port alone it is estimated that over 1,000 vehicles had been stripped and dumped in the truck park. Kuwait authorities estimate that over 50 per cent of the 420,000 private cars were either taken from the country, stripped or destroyed. Although an estimate of the total cost of damage to this sector has not been made, the probable loss in private and public vehicles alone could be of the order of $5 billion.

Kuwait Airways Corporation

Situation before 2 August 1990

332. Kuwait Airways Corporation was formed in 1954 and by 1990 had a fleet of 21 planes that carried more than 1.6 million passengers and over 45,000 tons of freight a year. The airline operations were world-wide, with scheduled flights to the United States, Europe, South-East Asia as well as all areas in the Gulf region.

333. The airline was supported by a full infrastructure base in Kuwait, including engineering and maintenance for all aircraft, crew training in simulators, catering and a fully computerized reservation system. The engineering infrastructure included wide-bodied and small plane hangars, an engine overhaul workshop, an engine test cell, a safety training centre and a catering unit with a production capacity of 20,000 meals a day. By July 1990, the fixed assets at cost totalled $1.3 billion, of which $840 million represented aircraft, $210 million spare parts and $95 million equipment, furniture and vehicles. The total number of employees was around 6,000.

Assessment of damage

334. An inspection was made of the Kuwait Airways Corporation installations at Kuwait International Airport and the main

office at Kuwait (Kuwait Airways Building). The Kuwait Airways Corporation also has many branch sales offices in the city. These were not visited, although it was reported by the Kuwait Airways Corporation that many of them had been ransacked and vandalized.

335. The mission inspected every installation in the airport. Without exception all installations had been completely plundered and many vandalized. The loss of equipment and snare parts is of staggering proportions.

336. The main administration building and the small aircraft hangar have both been destroyed by fire and explosions. There is serious structural damage to the old technical store and workshop and it is unlikely that they can be repaired. There is moderate (20-25 per cent) structural damage to the main wide-bodied hangar, which can be repaired. The main damage is to the ceiling and roof areas. The catering building has moderate to severe structural damage and will probably have to be demolished.

337. The incoming and outgoing cargo building and the short-term (i.e. perishable) cargo shed have all been looted and burnt. The structural damage is severe and repair does not seem possible. All other buildings are structurally sound or have suffered minor damage, mainly as a result of looting.

338. There has been almost total removal of equipment, furnishings, materials, spares and documentation in all areas. It is the estimate of the mission that over 90 per cent of all equipment, spare parts and materials are missing or have been damaged beyond repair. In particular all technical stores and workshops have been completely cleared, all of the more than 500 computer terminals as well as all outside wheeled plants (vehicles, moveable stairs, etc.) are said to have been removed by the invasion forces.

339. Both the aircrew training building and the other staff training centre have been cleared of most equipment, including sophisticated communication and presentation equipment in both centres. While the Boeing 727 simulator in the crew training centre was completely dismantled and removed, the Boeing 747 simulator remains comparatively undamaged.

340. In the printing section all the equipment has been removed. The Kuwait Airways Corporation reported that the equipment was in mint condition and was one of the best printing systems in Kuwait, the size of the print shop and the equipment manuals still remaining appear to support this assessment.

341. The loss of all maintenance equipment and spares will compel the Kuwait Airways Corporation to go outside Kuwait for routine and essential maintenance on its fleet.

342. The mission was informed that 15 aircraft were appropriated by the invasion forces—2 Boeing 767, 5 Airbus 310, 3 Airbus 300, 2 HS125 and 1 Boeing 727. In addition to these aircraft from the regular fleet two Gulf Stream G-III are also reported as having been taken. The total replacement cost of these aircraft has been estimated by the Kuwait Airways Corporation as being in the order of $600 million.

343. The Kuwait Airways Corporation has also suffered a tremendous overall loss in equipment, spares and materials, the majority of these items being missing rather than destroyed. While the structural damage to buildings is significant, it does not approximate the equipment loss, which has been estimated by the Kuwait Airways Corporation to be in the order of $250 million.

344. An inspection was also made of the Kuwait Airways Corporation building at Kuwait City. Because of military restrictions, only the first 3 floors of the 12-storey building could be inspected. These floors contained the ticketing, sales and promotion areas. There has been moderate-to-heavy looting of all areas and offices, including computer terminals, furniture and fittings. The top five floors could be seen to be extensively burnt and the interiors gutted. The top floor contained the main computer mainframe for the reservation system, and this almost certainly could not have survived. The building however would appear to be structurally sound and more detailed inspection would determine whether it can be rehabilitated.

TELECOMMUNICATIONS AND POSTAL SERVICES

Situation before 2 August 1990

345. The telecommunication services in Kuwait were state of the art. The services included national and international dialling; mobile telephones; telegraph, telex and telefax; and data transmission; as well as international radio and television transmission.

346. The Town Tower building in Kuwait City provided all telecommunication services. A new telecommunications centre was being built adjacent to it. The Tower buildings at South Sabahiya and Shuwaikh provided national services. Twenty-eight local stations covered the national telephone service.

347. A satellite Earth station, located in the north (see map 5), contained in a single complex two satellite antennas for Atlantic Ocean transmission, one for the Indian Ocean, one for Inmarsat and one for Arabsat transmission. The complex provided international telephone, telegraph, data transmission and television services.

348. A transmitting and receiving station, also located in the north, was used mainly for telegraph, news agencies and radio broadcast. It contained a complete multiplex and antenna towers for radio frequency transmission. Other important installations were a microwave transmission system, two international exchanges and a mobile Earth station.

349. The postal services consisted of eight full-service postal stations, 60 local stations with limited services, a full-service vehicle garage with 60 cars and 5 large transport trucks and a modern automatic sorting system.

Assessment of damage

350. The inspection of the telecommunications facilities by the mission indicated widespread disruption in the system and considerable harm to its physical infrastructure. The Town Tower building in Kuwait City has been ravaged. A 30,000-line telephone exchange, large quantities of equipment and spare parts have been stolen or vandalized. Cables, accessories, office equipment and supplies have been removed or damaged. Other installations and facilities have experienced damage ranging from 10 per cent to as much as 50 per cent.

351. The old building has suffered extensive damage to furnishing and other interior structures, and parts of walls and windows have been blown out. The damage is assessed to be in the order of a fifth of its total value. The new building has been hit by a bomb and the ninth, tenth and eleventh storeys have been severely damaged. They require extensive repair.

352. The tower building at South Sabahiya, with 20,000 local telephone lines and postal services, has been totally destroyed by explosives. The tower building at Shuwaikh is not structurally damaged, but the fourth, fifth and sixth floors have been completely looted. The mobile exchange, with a capacity of 25,000 subscribers, has been stolen. Spare parts, office equipment and supplies, testing equipment, computer terminals, tower antennas, public service accommodations, furniture and air-conditioning systems have been stolen or rendered unusable. All this amounts to a considerable loss, which is estimated to be about one third of its replacement value.

353. At the Umm Al-Haiman exchange, a fire caused heavy damage to the interior of the building and the equipment was torn out. The buildings and installations at Faylakah, Abdali and Wafrah have reportedly suffered total damage.

354. All other exchanges have sustained partial damage to power supply, test, maintenance and spare part equipment and supplies. Furniture, documentation, office equipment and supplies have either been wrecked or pillaged. The losses run from heavy to total.

355. The damage at the satellite Earth station and the transmitting and receiving station, both located in the north, is total. Equipment at the Arabsat and Inmarsat satellite stations was taken, and the station structures were subsequently destroyed by explosions. Although some buildings still remain at the satellite Earth station, the damage is so extensive that the station can be considered totally lost. Approximately four fifths of the microwave system used for television transmission has been removed or is damaged beyond normal use. A mobile satellite Earth station has also been stolen.

356. The Ministry General Store, containing spares for almost everything needed to operate the telecommunication industry, has been looted. The loss is of the order of 50 per cent. The main workshop is bereft of virtually all spare parts and tools. The engineering building has lost most of its documentation, equipment and office supplies. From the administration building, most office equipment, computers, furniture, copy machines, etc., have been stolen. From the technical and finance buildings, and from the training building, virtually everything has been taken.

357. The extent of the damage inflicted upon the underground public network, serving about 500,000 subscribers, will be clear only when the whole telephone network can be tested.

358. The telecommunication services in Kuwait had virtually come to a standstill by the end of February 1991. Provisional arrangements are being made to provide only the most basic needs. The complete reconstruction of the services will take considerable time.

359. The postal service has suffered an almost total loss of equipment and supplies. The full-service garage, serving about 60 postal vehicles and 5 large transport trucks, has been rendered completely destitute. The $3 million automatic sorting system has been removed, as have the revenue and postal stamps along with their safe containers. There is no postal service in Kuwait at the present time.

360. A comprehensive assessment of the entire sector can be only tentative at this stage. The estimates of damage inflicted upon the telecommunication and postal services are based primarily on preliminary investigations and the visual inspection of facilities. The international telecommunication services however have suffered almost total damage with the destruction of the Earth satellite facilities and the plundering of the Town Tower installations.

361. The losses in the national telecommunication sector exceed 50 per cent of the value of original assets. The corresponding losses in postal services are still higher. In addition to the reconstruction and equipment replacement costs, a considerable loss of revenues will occur in all the services. Total losses in this sector could amount to $1 billion or more.

7

AN ORGANIZED AND SYSTEMATIC EFFORT APPEARS TO HAVE BEEN MADE IN THE LAST FEW DAYS OF THE OCCUPATION TO DAMAGE OR DESTROY ALL NINE MAIN HOTELS . . . THE USE OF EXPLOSIVE CHARGES AND INCENDIARY DEVICES IN VIRTUALLY ALL OF THESE HOTELS WAS MANIFESTLY EVIDENT.

7 HOUSING, URBAN INFRASTRUCTURE AND MUNICIPAL SERVICES

RESIDENTIAL HOUSING, GOVERNMENT BUILDINGS, HOTEL AND TOURISM INDUSTRY

A) RESIDENTIAL HOUSING

Situation before 2 August 1990

362. Before the invasion there were over 260,000 dwelling units in Kuwait, including single homes and apartment buildings. More than 70 per cent of these were in Kuwait City and its suburb Hawalli, 18 per cent in the Governorate of Al Ahmadi and 11 per cent in the Governorate of Jahrah (see map 10).

363. Forty per cent of the housing stock comprised individual villas. They were of concrete construction and of a good to high standard, ranging in value from 30,000 to 60,000 Kuwaiti dinars. Apartment buildings were of a moderate standard; a few located along the waterfront were of particularly high quality. There were also some units of modest standard.

Assessment of damage

364. Inspection visits by the mission to all residential areas revealed widespread ransacking and vandalism of homes, shops and business enterprises. In the residential areas the damage was centred on those homes whose owners or tenants had fled the country at the time of the invasion. It was estimated that in the case of Kuwait City and its suburb of Hawalli, where 70 per cent of the residential units are located, approximately 120,000 housing units were affected. In Al Ahmadi about 35,000 residential units had been ransacked, as had somewhere in the region of 18,000 residential units in the Governorate of Jahrah. Random but detailed sampling covered more than 100 apartment buildings and dwellings in Kuwait City and more than 50 each in Hawalli, Al Ahmadi and Jahrah.

365. While most inspection was done by road survey, a large number of housing units were also randomly sampled by the mission in such urban areas as Fahaheel, Subahiya, Rikka, Abu Halifa, Fintas and Mahboula. The mission also consulted with neighbourhood cooperatives to ascertain damage to individual dwellings in their particular areas.

366. In the Rumaithiya district of the Hawalli Governorate, the mission estimated that three quarters of the houses had been looted and vandalized and 65 dwelling units totally destroyed. In the neighbouring district of Sabbah Al-Nasser, about two thirds of the houses had also been pillaged.

367. Particularly affected were residences of members of the ruling family, ministers, senior government officials and military personnel. Some were, in fact, not only looted and vandalized but gutted. Houses and buildings located along the coastline, and which happened to be the more expensive and luxurious, appeared to have suffered more than others. It was along the coastline that the occupation forces had positioned a great number of their troops as part of the defence. Consequently they occupied most of the houses and fortified a large number of them. Those houses were not only looted and vandalized but some of their structures damaged. The exteriors displayed particular evidence of such damage since they were used to position troops and weaponry. Pillboxes, bunkers and dug-outs have defaced the urban landscape along the seafront and considerable expense will be required for their removal.

B) GOVERNMENT BUILDINGS

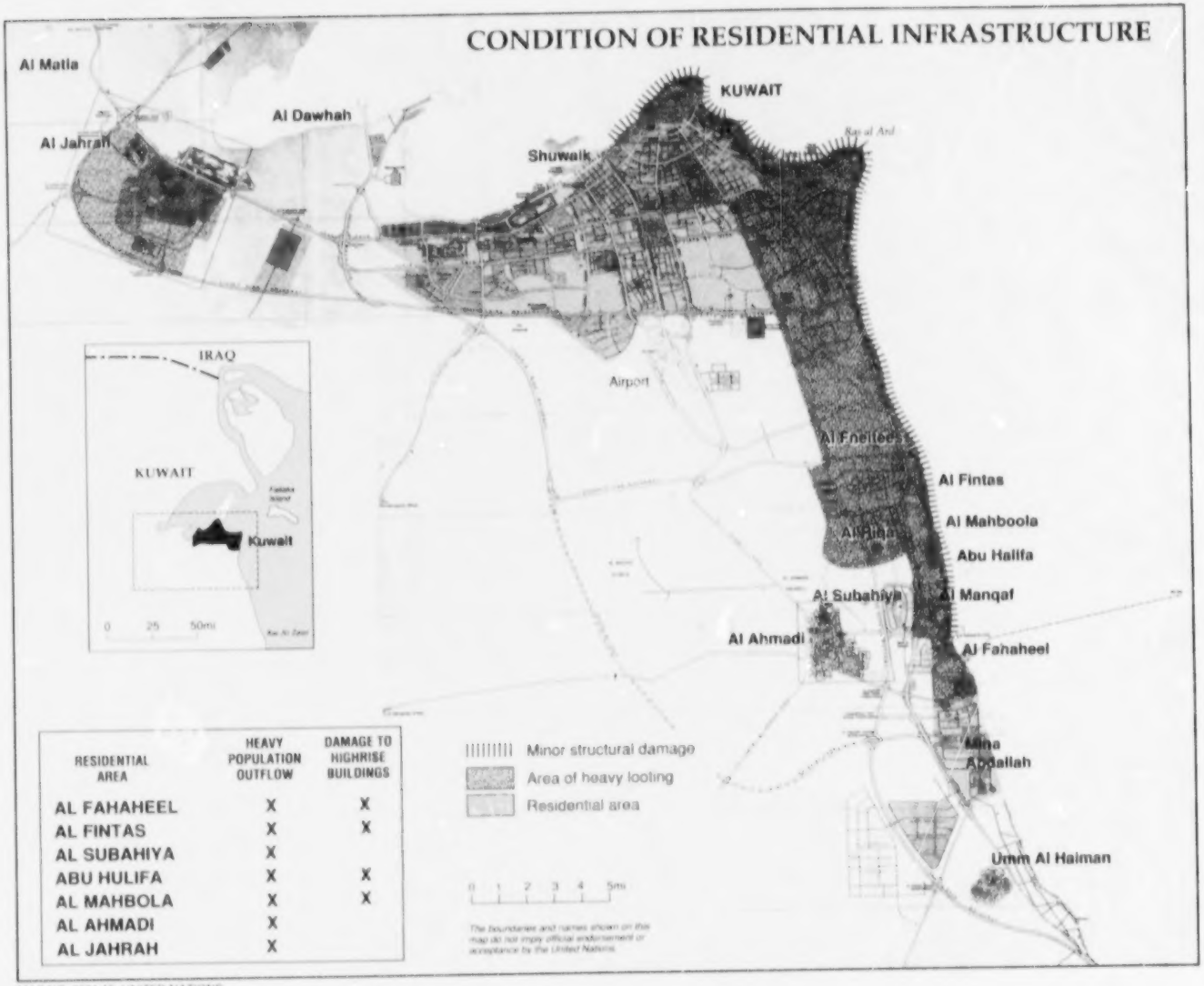
Situation before 2 August 1990

368. The headquarters of all government ministries were located in Kuwait City. Government departments and autonomous agencies were located throughout the country, although most had their principal offices in the capital.

369. All the ministries and the National Assembly had been supplied with most modern office equipment and furnishings and the majority were housed in modern buildings. By way of illustration, one major complex, built in 1985 at a cost of $175 million, comprised six ministries, a large commercial bank and other facilities. The Justice complex was built in the same year at a cost of $70 million. The standard of maintenance of those buildings and equipment within them was high.

MAP 10

CONDITION OF RESIDENTIAL INFRASTRUCTURE



RESIDENTIAL AREA	HEAVY POPULATION OUTFLOW	DAMAGE TO HIGHRISE BUILDINGS
AL FAHAHEEL	X	X
AL FINTAS	X	X
AL SUBAHIYA	X	
ABU HULIFA	X	X
AL MAHBOLA	X	X
AL AHMADI	X	
AL JAHRAH	X	

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Assessment of damage

370. The mission surveyed all ministry buildings. Surveys of their subsidiary departments and agencies, located outside these buildings, are detailed separately in the relevant sectors of the present report.

371. The building housing the Ministry of Foreign Affairs was ransacked and vandalized. All movable equipment had been removed and some installations damaged. Documents, files, archives and books had been pulled from their cabinets and shelves and scattered in the corridors or in open spaces within the compound. The main reception and conference halls, offices on all the Ministry's three floors and their support facilities had been plundered. The greater part of the furnishings had been damaged beyond repair. Floors appear to have been intentionally flooded, leaving a pervasive dampness throughout the building.

372. The National Assembly was gutted, while walls and ceilings in many offices in the Ministry of Health suffered considerable damage and virtually all its premises had been ransacked.

373. The government complex comprising six ministries was used for military offices throughout the occupation period. Furniture was removed from all offices of the Ministry of Social Affairs and Labour and from many offices in the Ministry of Social, Awqaf and Islamic Affairs and the Ministry of Justice. All computers and sophisticated audiovisual presentation equipment were removed from the Training Centre of the Ministry of Finance, as were furniture, chairs and carpets.

374. Shelling damaged the main entrance and the ground floor of the Ministry of Planning. Its library was severely vandalized. All computers in the Ministry of Education were removed and there was also evident looting of other equipment and furnishings.

375. The premises of the Finance Department of the Ministry of Public Works were gutted by fire. In the Ministry of Interior and the Ministry of Higher Education, the looting of office materials and equipment was massive.

376. Overall structural damage was minor and will involve mainly renovation to the interior and exterior walls and repairs to installations. The replacement of equipment, re-establishment of communications and refurbishing of interiors will cost several million dollars and take considerable time. Ministries are currently operating from makeshift locations.

C) HOTEL AND TOURISM INDUSTRY

Situation before 2 August 1990

377. Prior to the occupation, Kuwait boasted of a flourishing hotel and tourism industry. This comprised 18 hotels, of which 6 were deluxe and 3 first-class with the number of rooms ranging from 200 to 500. There were two large resort complexes at Al Khiran and on Faylakah Island. These could accommodate 4,000 guests in 670 chalets. The deluxe hotels provided employment to 2,200 managerial and service staff.

Assessment of damage

378. The hotel and tourism industry has been brought to a standstill. An organized and systematic effort appears to have been made in the last few days of the occupation to damage or destroy all nine main hotels. Three of the deluxe and first-class hotels are complete wrecks. Four have been heavily damaged to the point where it will require at least nine months, if not more, to put them back into commission. Damage to two others has been significant.

379. The Al Khiran resort complex, which had 198 chalets, has been completely vandalized and looted. More than half of the yachts and motor boats in its marina have been sunk. The Failaka complex could not be surveyed because of the apprehension that its surroundings were mined; damage here too is reported to be heavy.

380. The on-site inspection of the hotels by the mission revealed not only the enormous degree of pillage and plunder but significant structural damage of varying severity. The use of explosive charges and incendiary devices in virtually all of these hotels was manifestly evident. Reception and catering areas, bedrooms and suites had been burned. Appliances, furnishings and equipment had been ripped out and removed. In-house shops had been ransacked and safety deposit boxes blown up. It is estimated by the hotels concerned that the cost of rehabilitation and reconstruction work on the deluxe hotels would cost about $80 million, based on 800 rooms at $100,000 per room.

381. A particular loss to the Kuwaiti people was the damage caused to social and recreational amenities, including sports stadiums and the popular "Entertainment City", just north of the capital. Many of these facilities were destroyed and their movable fixtures pillaged and vandalized. The deprivation that will be most keenly felt will doubtless be that of the $225 million Kuwait City waterfront project, which was not only one of the country's largest urban and touristic projects but a retreat for its population. The waterfront has been rendered unusable because of fortifications constructed by the occupation forces, and because of the widespread destruction of social facilities and commercial establishments on the shore. In recent weeks, there have been reports of children straying into the area and being maimed by mines and booby traps. It is feared that, with the onset of the hot weather, such incidents will increase dramatically.

382. Damage was also considerable at all the 17 sporting clubs. They were used for military purposes during the occupation period. Two clubs were completely destroyed by bombing and, while the rest remained structurally intact, practically all furniture, fixtures, sporting facilities, and medical and other equipment were looted. The reported losses in all these clubs as a result of structural damage and looting are estimated by the Ministry of Social Affairs and Labour to amount to $380 million.

383. The mission surveyed all eight cinema houses in Kuwait City and other main towns. All had sustained heavy damage in terms of plundering of equipment, looting of attached shops and pervasive destruction of seating and furnishings.

384. The Kuwait International Fair, a modern complex that could accommodate a fairly large industrial exhibition, comprised eight pavilions in addition to recreational and parking facilities. The pavilions all had steel frame structures and extensive concrete floors. Three pavilions with a surface of more than 34,000 square metres were totally destroyed and will have to be rebuilt; one was heavily damaged and requires major repair; two suffered moderate damage and only one was virtually unaffected. On the whole, the loss to the complex is above 50 per cent of the replacement cost of all existing installations at the time of the invasion.

MUNICIPAL SERVICES

A) WATER SUPPLY

Situation before 2 August 1990

385. Kuwait is dependent for its water supply upon the distillation of sea water and wells in brackish water fields. Water is rendered potable at four desalination plants, operating in conjunction with the power stations at Az Zawr, Shuaiba, Shuwaikh and Doha, with a total maximum capacity of 250 million gallons a day, which comfortably exceeded the average demand of 140 million gallons a day. There are four brackish water fields with gathering centres at Wafrah, Umm Ghudayr, As Suboyhiya and Sulaibiya, with a total capacity of 100 million gallons a day.

386. The distilled water from the desalination plants is fed into a water-complex installation. At the complex the distilled water is blended, treated with chemicals and stored in reservoirs. This water is then pumped to subsidiary district pumping stations, and thence to the local consumer network or to tanker-loading stations. The total piped network extends for nearly 10,000 km.

387. The brackish water is pumped from wells to gathering stations. Here it is pumped either to the main water-complex installations for blending or directly to district pumping stations and thence to the consumer brackish water network (primarily for irrigation, livestock and industry).

388. The country has 18 district pumping stations, 25 storage reservoirs and 13 sets of high-level tank "towers", including Kuwait Towers, which alone has a capacity of 2 million gallons. The total storage capacity of the system is approximately 300 million gallons. A map of the main distribution system is shown in map II.

Assessment of damage

389. The mission visited all four desalination plants, two pumping stations, various storage towers and reservoirs and portions of the major pipelines. The damage to desalination plants has been documented together with the power station assessment as they are closely related to each other.

390. The main district pumping station at Mina Abd Allah, only recently constructed at a reported cost of over $40 million, was severely damaged by bombing. The main control building, generator building and recirculation plant were completely destroyed. The major equipment suffered moderate damage, although the pumps are at present immersed and may have resultant damage. It is anticipated that the Mina Abd Allah station will require at least 12 months to repair. As this station is the only one capable of pumping water from the Az Zawr desalination plant in the south to Kuwait City, its incapacity will be a loss during the early stages of restoration. It is, however, possible to feed Shuaiba from this installation by gravity feed.

391. There has otherwise been little damage to the main water complex installations, with the exception of that at Az Zawr, where most of the damage was minor. It had been largely repaired by the time of the mission's visit.

392. The brackish water pumping station at Sulaibiya has been completely destroyed. Military restrictions precluded visits to the other stations. However, as they are all in areas where military operations took place, considerable damage is likely.

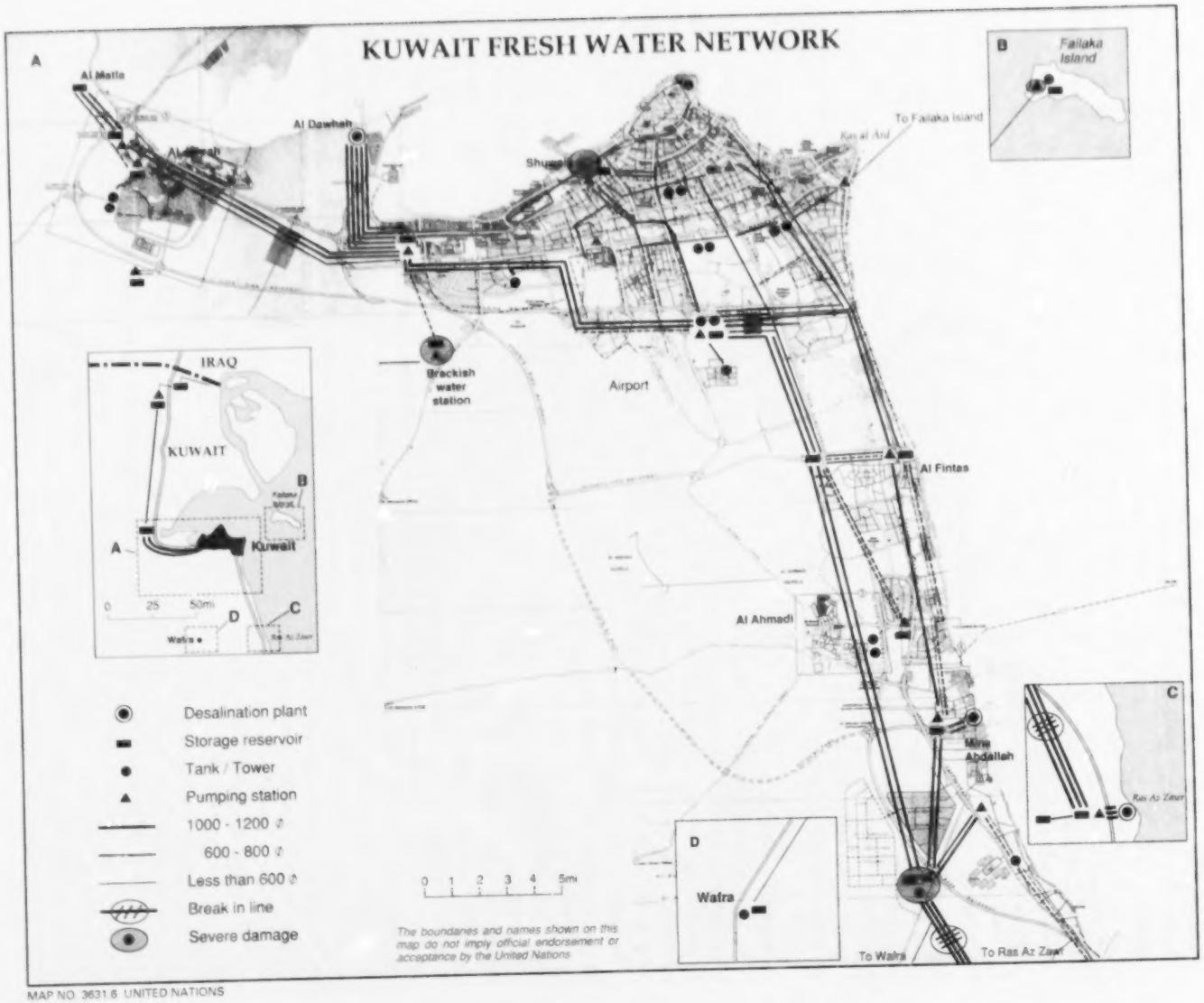
393. Some reservoirs and storage towers have suffered minor superficial damage. The rest appear untouched, although the storage towers have been empty for some time and there may be some unknown equipment damage.

394. The major pipe network has sustained some minor damage. The line between Az Zawr and Mina Abd Allah was cut at two places and many air-cocks and valves have been broken on the pipe to Wafrah and to Rawdatayn in the north. This damage is not difficult to repair. More breaks may appear, however, when water is pumped through the major pipelines. The local network has not yet been tested and some pipe breakages can be expected, especially in the waterfront areas of Kuwait City and Al Fintas. A significant number of consumer outlets (residential, commercial and industrial) have also been broken as a result of looting and vandalism of fittings. A large number of water tanks at factories and residences have been removed and taken to the battle front.

395. A major ancillary problem when water is restored will be the stagnant water and sewerage infiltration in the pipes. There will be a major health hazard until all pipes are thoroughly flushed.

396. Most offices and installations of the Water Department, including the main control centre and the testing laboratories, have been comprehensively looted of equipment, manuals and data. The control system at the control centre escaped unscathed. The mission was told that nearly all vehicles belonging to the Department were taken by the invasion forces.

397. Over all, with the exception of the desalination plant at Shuwaikh and the pumping station at Mina Abd Allah, this sector has suffered only minor structural damage, which can be repaired in a reasonably short time. It is expected that 12 to 15 million gallons a day will be available immediately when limited power is restored. That is about one tenth of the total demand for Kuwait at the present time.



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APRIL 1991

MAP 11

B) SEWERAGE

Situation before 2 August 1990

398. The Kuwait sewerage system served over 90 per cent of the population of the urban areas of Kuwait (see map 12). It comprised three major treatment works (Jahrah, Ardiyah and Rikka), with an additional minor treatment works on Failakah Island. The raw sewerage passed through a three-phase filtration and settlement process and most of the treated effluent was used to irrigate dairy and vegetable farms. All treatment works were controlled and monitored with state-of-the-art equipment.

399. A major contract to complete a data-monitoring centre in Sulaibiya was concluded in the first half of 1990 at a reported cost of over $60 million. This centre contained a very sophisticated monitoring system for effluents, with laboratories and a communications network to all stations. It also housed the main workshop for the Sanitation Department as well as the main storage areas for plant and spares.

Assessment of damage

400. The sewerage treatment system has been out of operation since the end of February, following the cut-off of power and water. Before that time the Ardiyah treatment works were kept in full operation and the Jahrah and Rikka plants in partial operation. The mission inspected the Jahrah and Rikka treatment plants, as well as selected pumping stations, the data-monitoring centre and the Sulaibiya irrigation farm. Iraqi forces were reported to have been stationed at the Jahrah and Rikka plants and at the data-monitoring centre throughout the occupation period.

401. Inspection revealed the complete and obviously systematic removal, and in some cases destruction, of the control equipment, plant and vehicles, testing equipment and supplies, spares, workshop machinery, electrical equipment (including four 500-kilovolt mobile generators at each site) and office furnishings at the Jahrah and Rikka treatment plants. Although not all of this equipment is essential for basic operation, it will require replacement to bring the system back to its previous level of safety and efficiency.

402. Emergency maintenance depots, including vehicles, equipment, spares and furnishings, were also looted and ravaged.

403. The data-monitoring centre has been completely and systematically robbed of all movable items, laboratory and test equipment and materials (including autoclaves, incubators and the computer-monitoring system), workshop machinery, plant and vehicles, an extensive spare parts stock and office furnishings and equipment. Total replacement would be required to make the centre operational. The pumping station and storage tanks at the centre appear undamaged.

404. The treated effluent from the Jahrah and Rikka plants is pumped to farms and used for irrigation. The irrigation system in the Sulaibiya area (using treated effluent from Jahrah) covers an area of 17.5 square kilometres. Although a full inspection of the farms was not possible because of military restrictions, it was apparent that this area had been used extensively by the Iraqi forces. A system of bunkers and trenches had been constructed by them and this may have effectively destroyed the irrigation network. The irrigation system in the Rikka area also could not be inspected because of military restrictions. Since Iraqi troops were also reported to have been stationed there, it is probable that the irrigation network in that area is also in a similar condition.

405. The mission was also informed that most pumping stations had been looted and one third of them were now flooded. Other damage could not be determined at this time, although all will require special maintenance.

406. Little structural damage was sustained by any of the buildings inspected except for windows, doors and interior fittings. There appears to be minimal damage to the primary and secondary treatment and filtration tanks and heavy associated equipment (pumps and screws). However, as some of the equipment is flooded, the extent of damage cannot be confirmed until power and water are restored and the equipment checked. Such equipment will require expert maintenance before being put back into operation. Some damage has been caused to the tertiary treatment installation at both Ardiyah and Rikka.

407. No check was possible of the local collection system and the pipe network, although the mission was informed that, except for two major breaks, only minor damage is expected, other than manhole damage by heavy military vehicles and blockages in manholes and pipes caused by large objects and solidification. The gravity lines and ocean outfall are still in operation, apparently undamaged.

408. Most of the historical and research data have been looted or destroyed at all centres. The remaining data are scattered and damaged and will require careful collection and collation.

409. Over all, the sewerage treatment system has suffered massive losses of equipment. The basic collection and treatment infrastructure is in place with only slight damage and should be repaired quickly.

410. A detailed list of equipment removed or destroyed from all locations during the invasion period was submitted by the Kuwait technical authorities. It has been checked for the locations inspected and appears realistic.

411. The Sanitation Department has estimated the cost of damage and loss of equipment alone at $130 million. Given the state-of-the-art control and testing system and the newness of parts of the system, this figure appears to be, if anything, conservative.

C) SOLID WASTE (GARBAGE) DISPOSAL

Situation before 2 August 1990

412. Solid waste disposal in Kuwait City falls within the responsibility of the Municipality. Except for medical and other sensitive waste, which is incinerated, all solid waste is trucked to landfill sites. The system disposed of an average of 3,500 tons per day.

413. All garbage collection and sanitation services in Kuwait are carried out under contract although the Municipality holds 140

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automated compacting garbage trucks and tipper trucks as emergency back-up. Each land-fill site is well supplied with tractors and a compactor. The total plant holding of the contractors included 300 compactor collection trucks, 200 large tippers and other trucks, 350 other vehicles and 80 items of land-fill equipment, including compactors and incinerators.

414. The cleaning section of the Municipality was housed in the main municipal buildings and in addition the section had 62 branch cleaning centres in Kuwait. Each centre was typically a four-room structure with a small pool of cleaning vehicles.

Assessment of damage

415. Visits were made to the main municipal offices, one land-fill site and three randomly selected cleaning centres.

416. The municipal offices were extensively plundered of all equipment and furnishings. Over 90 per cent of all the Municipality and contractors' collection trucks, tippers and land-fill equipment is reported to be missing or inoperable. This has brought the regular garbage disposal system to a complete standstill. Of the 62 branch cleaning centres, all have reported substantial loss of furnishings and equipment. The three visited by the mission were 70 to 80 per cent looted, although the structures were sound.

417. Because of the time required for the Municipality and its contractors to acquire replacement equipment lost as a result of the occupation, Kuwait has been compelled to enter into contracts with Saudi Arabian firms to carry out essential garbage collection and disposal for the next 12 months.

D) OTHER SERVICES

Situation before 2 August 1990

418. Services provided by the Municipality also included fire-fighting, food inspection, building inspection and permits and urban planning. Kuwait has 33 district fire stations and one central coordinating centre. All were linked by radio. It had a total of 350 fire-fighting vehicles, including over 60 state-of-the-art fire-fighting trucks. The total staff of the department exceeded 2,500.

419. The Municipality also had district offices for food regulation and building inspections. These typically contained four to eight offices, with three or four vehicles.

Assessment of damage

420. Over 90 per cent of the fire-fighting vehicles and equipment has been taken or destroyed, including all spares and stores. All district fire stations have been reported vandalized and most of the district communication equipment has been taken or destroyed. The central control equipment, however, is intact.

421. The majority of the district food and building inspection offices have been reported looted and most of the vehicles stripped or taken.

8

DURING THE OCCUPATION, THE LIFE-BLOOD OF KUWAIT'S RESEARCH ESTABLISHMENT WAS DRAINED. TWENTY YEARS OF ACCUMULATED RESEARCH DATA HAS BEEN TAKEN AWAY, BURNT OR REDUCED TO LITTER ... CULTURAL SITES SEEMED TO HAVE BEEN DAMAGED AT RANDOM ... [CULTURAL] LOSSES ARE IMMENSE—NOT JUST FOR KUWAIT, BUT ALSO FOR THE ISLAMIC WORLD AND THE WORLD AS A WHOLE.

8 SOCIAL SERVICES

HEALTH SYSTEM

Situation before 2 August 1990

422. Kuwait had until August 1990 achieved one of the highest health standards in the world. It had a crude death rate of 2.4 per 1,000, an infant mortality rate of 16.3 per 1,000 live births and a life expectancy at birth of 71.2 years and 75.5 years for males and females respectively. As communicable diseases and other main contributors to childhood morbidity and mortality were brought under control, the national health services had gradually expanded their scope by creating diagnostic and treatment facilities for non-communicable diseases, which required a constantly increasing level of technical sophistication and resources. This was reflected in the number and the quality of fixed health facilities, the efficiency of the emergency medical care and the creation of centres specializing in such areas as oncology, nephrology, organ transplant, open-heart surgery and neonatology.

423. Six regional and nine specialized hospitals, 74 polyclinics and several medico-social institutions provided medical, surgical and dental care and rehabilitation services to the entire population, free of charge. Private health facilities complemented this extensive network. Nearly 30,000 nurses (of whom 90 per cent were foreign workers) and more than 5,200 physicians (of whom 80 per cent were foreigners) provided these services, with a ratio of physicians and nurses to population which compared favourably with most industrial countries in the world.

Assessment of damage

Personnel, administration and the Faculty of Medicine

424. The immediate effects of the invasion of Kuwait were the departure from the country of thousands of expatriate health workers, followed by the destruction or removal by the occupying forces of large amounts of equipment and supplies, particularly in sophisticated fields.

425. The Ministry of Public Health was made inoperative soon after the invasion: many staff members left the country and others did not report for work. The building of the Ministry, situated on the sea-front, was transformed into a fortress with large stocks of ammunition stored on its ground floor.

426. The inspection by the mission showed that there was not a single room of this building left untouched: ceilings had been destroyed, files and documents had been strewn on the floors, corridors and staircases. Computers and typewriters had been taken away. During the occupation, the Ministry of Public Health was relocated at the Ibn Sina Hospital, where it had great difficulty in carrying out its directing and coordinating roles due to shortage of managerial staff, lack of communications and the absence of administrative and financial infrastructure.

427. Certain public health programmes suffered particularly severely during the occupation. The epidemiological surveillance system, which had been very effective in monitoring disease trends, was seriously affected by the decision of the Iraqi authorities to close down certain facilities, partly as a result of the loss of personnel and by a stated intent—as reported by health staff interviewed—to align the health care services with those that existed in Iraq.

428. This situation was aggravated by the removal of all equipment from the Public Health viral laboratory. At the time of this mission, the surveillance system had come to a standstill. There were no data flowing through channels and it was deprived of reliable sources of information and the necessary computer equipment to process it. Systems to detect the possible reappearance of malaria or other vector-borne diseases or the occurrence of air and water pollution related illnesses no longer functioned.

429. The Faculty of Medicine prepared 90 to 95 physicians each year over a seven-year curriculum. It offered post-graduate training in clinical and public health specializations. It also conducted operational research projects on issues relevant to national needs and basic research. The Faculty had a teaching staff of 370, 8 to 10 per cent of whom were Kuwaitis. The laboratories offered a broad range of specialities. The library, apart from having a wide collection of books, subscribed to over 1,100 periodicals.

430. During the occupation, particularly in October and November, the Faculty was looted of all its electro-medical, audio-visual and other stationary equipment. The library and computers were also removed. At the time of the mission's visit, the Faculty was

closed. 95 per cent of the Iraqi staff had left the country and there was complete uncertainty as to when it could be re-equipped, restaffed and reopened.

General hospitals

411. There are six general hospitals in Kuwait, each with a bed capacity ranging between 400 and 500 beds. All were surveyed by the mission. The equipment and staffing of these hospitals compared favourably with those of industrialized countries. The occupation had two effects on these facilities. Firstly, a large proportion (nearly 80 per cent) of the nursing staff left the country, most of them within the first three months after the invasion. Two thirds of the physicians fled the country and others were taken to Iraq under an "exchange programme" that would provide for their replacement by Iraqi physicians. Secondly, the extensive and modern equipment of these hospitals, particularly in the electromedical field, was either removed from the country, or exposed to damage as a result of the lack of maintenance and skilled personnel to operate it.

412. The depletion of personnel can be illustrated by the example of the Al-Amiri Hospital, which saw its number of physicians reduced from a pre-invasion level of 360 (including 60 surgeons) to 8 (including 5 surgeons). Meanwhile, the number of nurses fell from 540 to 60 and this compelled the hospital to close down 10 of its 12 wards. The Mubarak Alkabeer Hospital lost 60 per cent of its medical and nursing staff and was, at the time of the mission, functioning at 48 per cent capacity after having enrolled medical students and volunteers to assist the remaining personnel. It was at that point the only functioning intensive care unit in the country out of the original six. Only 1 of the 5 operating theatres and 7 of its 18 wards were functioning during the occupation. The Jahra hospital, with a capacity of 500 beds, had to be closed as its number of physicians fell from 300 to 45, nurses from 400 to 30, and laboratory and other technicians from 120 to 25.

413. The physical structures of the general hospitals were not significantly affected but some of the fixed equipment items had been taken away while others had ceased to function owing to lack of maintenance and lack of repairs. Because of the absence of reliable electrical supply, several hospitals had not attempted to put back into operation the most sensitive elements of their equipment. A complete check would be required before the full extent of the damage caused to the equipment can be fully assessed and remedied. A list of missing or destroyed equipment suffered by all institutions was made available to the mission through the Ministry of Public Health.

Specialized hospitals

414. The mission visited all the nine specialized hospitals in the country, which serve as tertiary-care referral facilities and operate outpatient clinics.

415. The Infectious Diseases Hospital is a 220-bed facility with 7 wards whose bed occupancy rate averaged 30 per cent, and never exceeded 70 per cent during occupation. Two of its wards were hit by bombs, causing structural damage and loss of equipment. There are now 5 wards that are functional with a total of 150 beds but only 30 are actually used owing to reduction in demand. Lack of water and electricity and the shortage of personnel. The occupation resulted in a reduction in staff from 24 physicians to 6, 12 laboratory technicians to 4 and 170 nurses to 18. Equipment in the laboratory and the X-ray department has suffered from lack of maintenance and repair.

416. The Gastroenterology Centre attached to Al-Amiri hospital suffered minor damage to its four-storeyed building. However, a large amount of equipment was taken away by the occupying forces: the monitoring equipment of the first floor recovery-room and the endoscopy equipment in five of the six specialized rooms. Major damage had been caused to the laboratory, with some of the heavier equipment having been dismantled, and the ultrasound room was emptied of its apparatus. At the time of the mission's visit the hospital was closed in preparation for major refurbishing and re-equipment.

417. The Kuwait Cancer Control Centre was a diagnostic, treatment and research centre that provided services to persons from Kuwait and from other countries in the region. The Centre includes three departments: surgery, radiotherapy and chemotherapy. Its laboratories of haematology, histology, tumour markers and tissue culture ceased operation shortly after occupation. The maintenance of equipment was usually done between June and September and, owing to the absence of such services in 1990, a linear accelerator, one of the two Cobalt machines, and a CAT scan had stopped working and had yet to be put back into service. With its diminished diagnostic and monitoring capability, the Centre saw its attendance decline.

418. While no damage was caused to the structure of the Al-Razi Orthopaedic Centre, it was left with only two qualified orthopaedists. As the number of physicians fell from 80 to 20, the number of nurses from 200 to 50 and the number of support staff from 200 to 70, the Centre could perform only three operations a day as against 30 earlier. All ambulances had been removed from the hospital. The most acute problems were the shortage of staff and the lack of electricity and water.

419. The Centre for Organ Transplant had once harboured a complete dialysis centre and surgical units in a modern building situated within the Al Sabah complex. Doors, windows and part of the roof of the building had been damaged. Most of its equipment had been removed, including the dialysis machines, electromedical apparatus and much of the furniture and equipment from operating and intensive care rooms. Floors had been littered with patients' files, registers and small equipment. Some of the rooms could be inspected only from the threshold as live ammunition scattered around the site had not yet been removed by explosives disposal teams.

420. Only 30 per cent of the 670 beds in the Maternity Hospital are currently used. The main factor is the scarcity of personnel: 80 nurses and midwives out of the initial 320. Volunteers are currently providing assistance in administration and patient care.

Five out of 87 incubators had been removed. The other incubators and the entire intensive care unit were not being utilized because of insufficient staff resources.

441. The Psychiatric Hospital comprised the main hospital unit with 567 beds and 18 out-patient clinics. The drug addicts' clinic was vandalized soon after the occupation. The number of medical officers was reduced to 6 from 64 and nurses from 330 to 96. Of 19 wards, only 8 were operational, with 225 beds.

442. The Institute for Islamic Medicine, which operates from a modern building and includes a mosque, was within the range of artillery fire in August 1990 when invading forces were faced with Kuwaiti resistance. This building was damaged by several shells, one of which perforated the base of the minaret. The Institute had been emptied of its contents, which included a library, benches for laboratory work and furniture.

443. The Allergy Hospital provides allergy tests as well as desensitization to ambulatory patients. At the time of the mission's visit, the environment, food and pulmonary functions were out of service. The hospital and its store were vandalized and medical as well as other equipment, including telephones and the telephone switchboard, had been removed.

444. The Chest Hospital has two sections, one for tuberculosis and one for thoracic and cardiovascular surgery. Fifty-four medical officers were on the staff before the occupation. At present neither cardio surgery nor thoracic surgery can be performed because of the scarcity of nurses and absence of cardiology surgeons.

Polyclinics and other services

445. There were 74 polyclinics providing different preventive and curative services to the Kuwaiti population before the invasion. At the time of the mission, only 11 polyclinics were operational at different levels. Primary health-care components with some speciality clinics were provided in these centres. There were also 547 school health centres, none of which was operational as all schools were closed. Most laboratories, though staffed, could not provide any service owing to lack of water and electricity. In the Hawalli region, seven polyclinics were only partly operational, mainly because of insufficient staff and lack of priority supplies and equipment. Immunization and preventive and curative health care were provided to pregnant women, mothers and children as well as to diabetic and hypertensive patients. Some of the clinics, such as the Salimeh and Rumaj Third polyclinics, had not resumed activities.

446. The physical structure of most health centres was in operational status, although doors and windows had been forced and furniture partly damaged. Portable equipment had been taken away.

447. The Kuwait Dental Centre comprised two sections, one of which had been renovated only a year before occupation. A great deal of its equipment had been removed, including dental chairs. Of the 350 dentists in the country prior to occupation (both generalists and specialists), 180 remained.

448. The Kuwait Society for Handicapped Children is a seven-floor building comprising three floors for children's accommodation. There were 135 residents, all severely handicapped mentally or physically. The Society also provided a day-care centre for 40 children. It normally closed in July/August, during which period both resident and day children stayed with their families. At the time of the invasion only 18 of the 165 children remained at the facility.

449. The occupying forces placed artillery equipment around and on the top of the facility. By January the staff was compelled to vacate the building as the children were terrified by anti-aircraft fire. The original building was looted, and doors leading to the nursing quarters were broken.

Diagnostic equipment, hospital laboratories and blood bank

450. The six general and the nine specialized hospitals were well equipped with modern diagnostic equipment of a standard that compared favourably with that of industrialized countries. There was sufficient staff to operate, maintain and repair this equipment and there were stocks of small supplies and reagents needed for this purpose.

451. The medical school laboratories provided a more extensive range of investigations and were used both as referral laboratories and as a training site for medical, nursing and medical-engineering students. All diagnostic equipment was serviced by private companies represented in Kuwait through specific service agreements.

452. During the occupation, most of the equipment became non-functional as specialized staff left and spare parts were gradually exhausted. The local branches of firms that customarily serviced the equipment closed business after the withdrawal of their staff from the country. The virology laboratory of the Ministry of Public Health and the laboratory and X-ray equipment of the Organ Transplant and Gastroenterology Centres as well as all support laboratories of the Faculty of Medicine were removed.

453. Basic and simple diagnostic procedures were being provided at the time of the mission but physicians were obliged to rely largely on clinical diagnosis and had to refer cases needing specialized investigations to other countries.

454. The Central Blood Bank was originally established in 1965 in the Al-Amiri Hospital laboratories. It moved to well-equipped, new premises in the Jabriya area in 1987. It provided blood and blood products to all government and private hospitals in Kuwait. Blood was obtained from voluntary donors. By mid-1989, Kuwait had become totally self-reliant in blood and blood products. The Central Blood Bank was totally equipped for blood collection, testing, plasma fractionation and conditioning. There were sufficient cold rooms, supplies and a network of voluntary donors to meet regular demands. A stock of 1,000 pints was maintained in reserve. Blood collections were tested for human immune deficiency virus (HIV), haemoglobin and antibodies routinely.

455. During the invasion, the number of personnel dropped from 307 (17 administrators and 90 technical staff) to 50 (10 administrators and 40 technical staff). Some equipment and vehicles were

taken away by occupying forces but the Central Blood Bank remained operational throughout the occupation. At the time of visit, it was functioning, but the lack of donors had brought the reserve of blood units to below the prescribed level of 500. Diagnostic reagents were lacking, as was the supply of certain common blood groups.

Essential drugs and ambulance services

456. Before the invasion, drugs and small medical supplies were procured through a semi-autonomous company. The Central Medical Store remained functional during the occupation but an estimated 60 per cent of the existing stock with a total estimated value of KD 13 million was reportedly taken to Iraq. The computerized system that enabled the Central Medical Store to process the supplies was paralysed by the lack of maintenance, repairs and computer operators. Limited quantities of drugs were also taken away from central pharmacies of hospitals but the stocks remained by and large sufficient to cope with the demand, with the exception of certain specialized drugs for the treatment of metabolic and cardiovascular diseases.

457. The drug quality control laboratory was almost completely emptied. What was left was a small amount of glassware, chemicals and a few pieces of equipment. All records had disappeared. The animal house had been emptied and destroyed. The rest of the building was intact.

458. The country's ambulance service was modern and quite extensive. There was a central system for receiving calls 24 hours a day and dispatching ambulances from a central base situated on the outskirts of Kuwait City. The services consisted of a fleet of 170 vehicles including 4 large mobile intensive care units. The fleet of ambulances was assigned to 22 centres in the country, including the 6 regional hospitals. Soon after the occupation, the fleet was confiscated and sent to Iraq or allocated to the occupation forces. The central wireless system to which the ambulances were linked was removed. This resulted in a severe disruption of services.

Overall assessment

459. At the time of the mission, Kuwait was faced with acute difficulties stemming from its prior dependency on expatriate health personnel, the majority of whom had left the country, as well as with challenges created by an adverse environment. The population was somewhat unprepared for a lifestyle so in contrast to the secure conditions that it had previously enjoyed. Health hazards were generated by air pollution, water scarcity and the large amount of explosives scattered in and around populated areas. Of the six regional hospitals, one was closed owing to a shortage of nursing personnel and the non-availability of electricity and water. The others operated at reduced capacity, in the range of 10 to 20 per cent for most of them. The damage caused to the infrastructure, the removal of equipment, the reduction in labour force and the lack of electricity and water had critically affected the provision of care.

460. The occupation of Kuwait had also depleted the country of its trained electro-medical technicians and of the spare parts needed for the repair of diagnostic laboratory, X-ray and other modern apparatus. As a result, diagnostic investigations and monitoring tests were brought to a minimum and the clinicians had to depend heavily on less reliable and precise clinical diagnoses.

461. The short- and long-term effects of pollution arising from the oil-well fires called for complementary monitoring systems, some aimed at the measurement of environmental parameters, others at the trend of selected diseases, signs or symptoms. The air and water monitoring stations had not begun operation at the time of the mission's visit because of the lack of electricity and the loss of equipment. Unfortunately, the vast amount of ordnance scattered throughout the country and the large number of mines in populated areas have caused a high number of injuries, particularly among children and adolescents. The danger posed by the mines will be accentuated when the major part of the population now abroad returns to its homes. The psychological impact of the occupation on children and its effects upon the mental health of both returning prisoners of war and civilians taken forcibly to Iraq require a special programme for counselling, readaptation and rehabilitation.

462. In parallel with the damage assessment mission, WHO and the United Nations Children's Fund (UNICEF) worked closely with the Ministry of Public Health to elaborate an emergency response plan of action to take immediate effect. This will include such activities as the monitoring of air, water, marine and land pollution and prevention and control interventions to minimize the impact of pollution on the health of the community.

463. A UNICEF team provided the mission with a copy of the agency's recent report dealing with the health and nutritional needs of children in Kuwait. It has been suggested by a UNICEF child psychologist that the violence, stress and anxiety generated by the war had caused childhood trauma and loss which will necessitate both short- and long-term rehabilitation programmes.

464. In the view of the mission, the rehabilitation of the health system could take at least a full year before it is restored to the capacity and standards prevailing before the occupation. This will, of course, be contingent on resources and staff being made available.

EDUCATION, CULTURE AND INFORMATION

A) EDUCATION AND RESEARCH

Situation before 2 August 1990

465. The Government of Kuwait placed great importance on the development of education and the preservation and enhancement of Kuwaiti culture. The country's educational objectives were to introduce students to their Islamic Arab heritage and to the history

of Kuwait and the development of its society and traditions, as well as to promote the ability to think according to scientific methods. These objectives were effectively translated into practice in an educational system that gave balanced attention to the past and the future, to letters and science.

466. Education was free through the secondary level to Kuwaitis and non-Kuwaitis alike. The educational structure began with kindergarten, followed by four-year stages for primary, intermediate, secondary and university. In 1989/90, 512,515 pupils and students were enrolled in kindergarten through secondary school. In all, 73 per cent of the total attended public schools, and 43 per cent of the total were Kuwaitis. Technical colleges provided two years of specialized education and teacher training of four years' duration. Technical training of one year followed intermediate classes. Technician and teacher training enrolments were around 12,000, while university enrolment was 14,106, of which 10,105 were Kuwaitis.

467. The Kuwait Institute for Scientific Research, created in 1967, conducted scientific research particularly in support of national industries and environmental protection. It served government and industry by following up scientific and technological achievements world-wide. The Kuwait Institute for Scientific Research occupied a new facility in the Shuwaikh area, built in 1986 at a cost of KD 24 million, as well as two field stations, all constructed, staffed and equipped to world-class standards.

468. Many Kuwaiti professors from the Science and Engineering Faculties of Kuwait University held joint appointments with the Institute. The University laboratory buildings are older than those of the Institute, but equipment standards are the same. The annual equipment budget of the Science Faculty alone amounted to KD 1.5 million. Under the University's community service policy, a great deal of university research was performed in service to the Government.

469. The Arts, Law, Shariah, Education and Commerce Faculties were moderately equipped and pursued cooperative programmes with European universities. The Medical and Allied Health Faculties worked in close cooperation with the Mubarak Hospital, and the Medical Faculty cooperated internationally in its research.

470. Technician-level training was on the upswing in Kuwait, and had reached 12,000 students and trainees in 1990, distributed between four colleges (business, technological studies, health studies and basic education) and four training centres (telecommunications and air navigation, electricity and water, industrial training and special sessions). All colleges and training centres had been updated recently with state-of-the-art equipment and, in some cases, new buildings.

471. In 1990, the country had 633 public and 337 private general education institutions. The private schools received subsidies from the Government, but mainly served the non-Kuwaiti population. The teaching staff in public primary schools was 74 per cent Kuwaiti, but this figure dropped to 33 per cent for intermediate schools and 20 per cent for secondary schools.

472. Libraries—even at kindergarten level—were generously stocked, classrooms well provided with visual aids and laboratories fully stocked with equipment and supplies. The major educational and research establishments are shown in map 13.

Assessment of damage

473. During the occupation, the life-blood of Kuwait's research establishment was drained. Twenty years of accumulated research data by the Kuwait Institute for Scientific Research researchers and the University professors have been taken away, burned or reduced to litter. The mission's inspection showed that lecture notes, research data and personal technical libraries are missing. The entire libraries of the Institute and all the nine university faculties, totalling over 300,000 volumes and 8,300 periodical titles and a quarter of a million technical reports on microfiche, have been removed, reportedly by truck to Iraq. The books, manuscripts and files of four widely read journals published by the Faculties of Arts and Law have been plundered or destroyed.

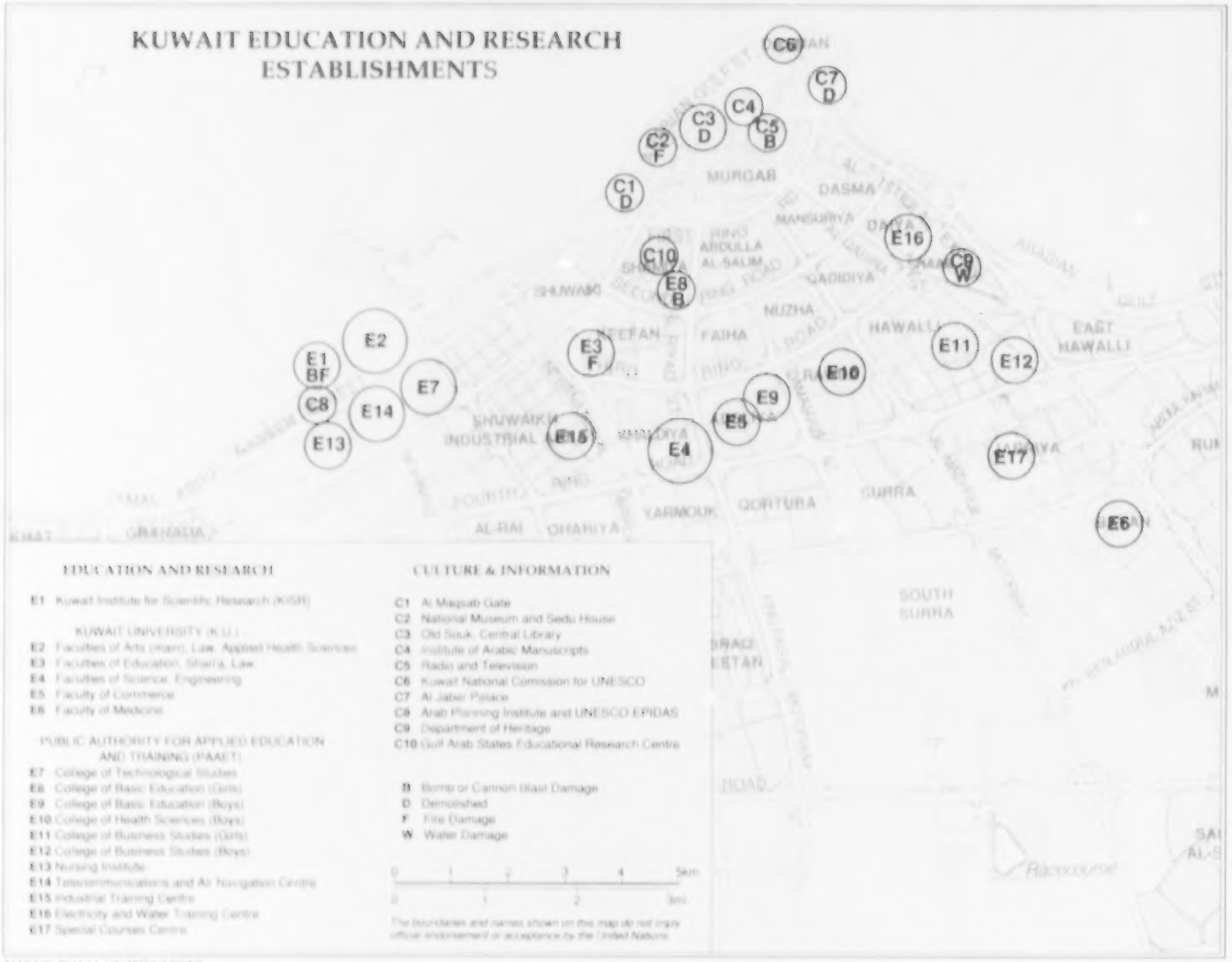
474. The sophisticated equipment used for generating the research data is also gone. At least two very large mainframe computers have been taken—an IMB 3090 from the Kuwait Institute for Scientific Research and a large VAX machine from the Central Services of the University. This loss includes the data of the Kuwait Institute for Scientific Research's National Science Information Centre. Smaller mainframes have been taken from the Faculties of Science and Engineering and complete specialized teaching laboratories in psychology, languages, commerce and geography are gone. Costly spectrometers, centrifuges and virtually every other sophisticated machine and instrument have been taken from the science and engineering laboratories, while all faculties together have lost more than 1,000 personal computers. Typewriters were removed on a massive scale.

475. Over all, there has been a mass removal of equipment. The June 1990 book value of that belonging to the Kuwait Institute for Scientific Research was KD 22 million, and the University inventory is far larger. The removal was systematic.

476. The institutional files of all University faculties were thoroughly ransacked, making it difficult to establish lists of lost equipment and accessions and virtually impossible to re-establish records of students, staff and financial matters.

477. All modern furniture has been taken from classrooms, offices and meeting rooms. Even non-academic spaces were plundered. The University sports stadium had 20,000 plastic seats removed. Virtually all buildings have been defiled and minor damage inflicted to finishes, as well as to electrical and plumbing systems, which may be valued at 10 per cent of replacement costs. Fires were set selectively in both the University and the Kuwait Institute for Scientific Research. Gunfire was intentionally aimed at the latter's main building, causing some structural damage. Restoring the Institute's building will require around 50 per cent of replacement value for burned areas and blast-damaged areas and 10 per cent elsewhere.

KUWAIT EDUCATION AND RESEARCH ESTABLISHMENTS



EDUCATION AND RESEARCH

E1 Kuwait Institute for Scientific Research (KISR)

KUWAIT UNIVERSITY (K.U.)

E2 Faculties of Arts (main), Law, Applied Health Sciences
E3 Faculties of Education, Sharia, Law
E4 Faculties of Science, Engineering
E5 Faculty of Commerce
E6 Faculty of Medicine

PUBLIC AUTHORITY FOR APPLIED EDUCATION AND TRAINING (PAAET)

E7 College of Technological Studies
E8 College of Basic Education (Girls)
E9 College of Basic Education (Boys)
E10 College of Health Sciences (Boys)
E11 College of Business Studies (Girls)
E12 College of Business Studies (Boys)
E13 Nursing Institute
E14 Telecommunications and Air Navigation Centre
E15 Industrial Training Centre
E16 Electricity and Water Training Centre
E17 Special Courses Centre

CULTURE & INFORMATION

C1 Al Maqsab Gate
C2 National Museum and Sadu House
C3 Old Souk, Central Library
C4 Institute of Arabic Manuscripts
C5 Radio and Television
C6 Kuwait National Comission for UNESCO
C7 Al Jabel Palace
C8 Arab Planning Institute and UNESCO EPIDAS
C9 Department of Heritage
C10 Gulf Arab States Educational Research Centre

B Bomb or Cannon Blast Damage
D Demolished
F Fire Damage
W Water Damage

0 1 2 3 4 5km
0 1 2 3mi

The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

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478. The treatment meted out to the technician and teacher education colleges and training centres was similarly destructive. As part of a new priority programme of the Kuwaiti Government, the colleges and training centres were benefiting from substantial investments in equipment and new buildings. The mission's examination of the premises of these eight institutions showed a degree of thoroughness in the plundering not found in other educational establishments. It is no exaggeration to say that 99 per cent of technical equipment and new furniture was taken, including perimeter laboratory benches. The 1990 book value of the equipment is not known, but the combined total may be more than the value of the equipment of the Kuwait Institute for Scientific Research. Buildings suffered damage in the order of 5 per cent of replacement cost. The Technical College was converted into an ammunition depot, and the Basic Education College for Girls suffered bomb damage judged to be about 15 per cent of replacement cost and files were largely destroyed.

479. The mission found the schools in a state of disrepair and with interiors defaced by graffiti. Some glass had been broken, air-conditioning units had been wrenched out, electrical systems damaged and water taps removed. Those public schools used as military headquarters suffered the most but, on the basis of survey data available at the time of the mission, almost every school suffered from occupation and ransacking. Field observations by the mission indicated that perhaps as many as 15 per cent of the schools have been moderately damaged by fire or explosions, and some 2 per cent have been completely destroyed. It appears that private schools have suffered less from organized removal of furniture than have public schools. Didactic equipment losses are 100 per cent, furniture losses at around 50 per cent.

480. Looked at as a whole, it seems the most serious damage has been done to the research capacity of the country. A whole new information system needs to be developed that will replace lost books, microfilms and microfiches and electronic data. Furthermore, the University and research institutions will have to reinstall many new laboratories and replace virtually all of their furniture and equipment. Required building repairs range from 10 to 20 per cent of the value of new buildings. Where fires have taken place, repair costs may be as high as 50 per cent and, where major destruction has occurred, 100 per cent.

481. Education has already lost one vital academic year. General education is expected to resume later in 1991. However, applied education institutes and colleges could lose a total of one and a half to two years, and university faculties from two to three.

B) CULTURE

Situation before 2 August 1990

482. An important objective of the Kuwaiti Government has been the promotion of activities relating to the culture of the Islamic world and of all Arabs. Kuwaiti identity was seen as a part of this broad picture.

483. As much of the Islamic tradition is embodied in ancient manuscripts, this was an area in which many Kuwaiti institutions took an interest. For example, the Central State Library held private collections of some 8,000 rare or unpublished materials, and the Department of Arab Heritage of the National Council for Culture, Arts and Literature had collected microfilms of some 25,000 titles, in addition to 1,600 original manuscripts, a library of 10,000 volumes and a special collection of 150 illuminated pages from historic manuscripts. The Educational, Cultural and Scientific Organization (ALECSO) of the League of Arab States (LAS) located its Institute of Arabic Manuscripts in Kuwait. This institute searched out from libraries around the world, as well as from private collections, manuscripts covering religion, history and culture. These were studied by scholars, catalogued and incorporated in published bibliographies. Certain important texts were reproduced for wide dissemination.

484. The Central State Library, established in 1935, had acquired a collection of 95,000 titles in all fields, plus a unique collection of traditional Islamic and Arabic music recorded on tape, supported with a display of musical instruments. It also held tapes of important seminars and lectures given in Kuwait. To bring this knowledge to the neighbourhoods, the Central State Library, in cooperation with the Ministry of Education, had supported the creation of 22 neighbourhood libraries, which held a total of 293,000 volumes. Development of a centralized electronic catalogue linking all these libraries was under way and a pilot project already launched. The Kuwaiti National Commission for UNESCO served as an information centre for UNESCO publications and had a specialized library of some 3,000 titles.

485. The location in Kuwait of specialized regional institutes brought in a wide knowledge base, which was available not only to Kuwaiti scholars but also to other scholars visiting the country. These institutes were the LAS Arab Institute for Planning (with roughly 50,000 volumes in its library), the headquarters of the UNESCO Educational Innovation Programme for Development in the Arab States (EIPDAS) (5,000-10,000 titles), and the Gulf Arab States Educational Research Centre, sponsored by ALECSO, which held a specialized library on curriculum development that was considered outstanding in its field.

486. It is impossible to quantify or determine precisely the number of personal libraries and collections that many Kuwaiti scholars maintained in their homes. These included rare books and manuscripts, as well as more general information. Access to these collections was limited, but some of the owners generously opened them for use by other scholars, neighbours and close friends.

487. In developing its National Museum, Kuwait set out to create an institution of which the nation could be proud. The archaeological finds at Faylakah Island gave evidence of cultures from the Stone Age through the Bronze Age and Hellenistic Period to the Islamic Period. Objects from these finds were professionally displayed in the new Museum buildings. The ethnology collection presented traditional Kuwaiti life, including that of the

Bedouin, seafarers and town-dwellers. A well-preserved boom (dhow) proudly proclaimed Kuwait's tradition in maritime trade, and was a gathering point for national day celebrations. A gallery of contemporary art and a planetarium were further attractions. A branch museum was located on Faylakah Island, and about 120 items were on loan for display at the airport.

488. Important private collections were also publicly displayed. The most important of these, the Islamic Antiquities Collection (*Dar al-Athar al-Islamiyah*), also known as the Al-Sabah Collection, was located in the National Museum building, but owned by a member of the royal family. The collection contained over 20,000 items covering a time-span of 12 centuries. The Al-Sedu Society maintained an attractive, dynamic display of Bedouin weaving and objects in an old house that had been incorporated into the Museum grounds. The Museum and the Al-Sedu Society cooperated in giving courses in crafts and restoration work.

489. The immovable cultural heritage of Kuwait had been rapidly declining as old buildings were demolished to make way for the modern Kuwait. In 1988, the Kuwait Municipality published a Kuwait historical preservation study and a list was established officially protecting 122 sites. Included in this list were old houses and palaces, early institutional buildings, the old Kuwait City souks and the five gates that are remnants of the 1920 city wall. Among the notable structures were the old National Museum building adjacent to the Dasman Palace and the Al-Badr and Al-Sedu houses inside the National Museum grounds. The remaining area of the old Kuwait City souk had been acquired by the Ministry of Information to ensure its preservation. New construction in the area was under way, but under carefully controlled conditions where the designs were based on the old buildings they replaced.

Assessment of damage

490. As far as the mission could determine through several on-site inspections, there are probably no public or institutional libraries of any importance left in the country.

491. The mission visited 19 libraries of various sizes and found that the removal of the major libraries and specialized collections was organized and the transfer orders rigorously executed. The Central Library collection, with its card catalogue, was removed beginning in December 1990. The microfilm collection of the Department of Arab Heritage was destroyed by malicious water damage to the building. Its library, original manuscripts and illuminated manuscript pages were damaged and require the urgent assistance of a restoration specialist. Smaller libraries, such as the neighbourhood public libraries and school libraries, lost a portion of their collections.

492. All libraries and institutes have been severely affected by the vandalizing of records. The major libraries had furniture and bookstacks removed, and virtually all libraries have been entirely stripped of computers and other specialized equipment. The Central Library's collection of old musical instruments has disappeared, although the instrument cases were left behind.

493. The mission was informed that the National Museum was broken into on 27 September by the occupation authorities. In the final week of the occupation the Museum was gutted by fire, which reduced the planetarium projector to a stark black hulk in a charred room, while the boom (dhow) was burned so completely that only ashes and twisted metal remain where it once stood. The objects that had been stored at the Faylakah Island branch of the Museum awaiting display are missing; those already on display at Kuwait International Airport were looted.

494. The private Al-Sabah Islamic Antiquities Collection, located in the Museum buildings, was looted in its entirety, along with the Museum's own collections. The Al-Sedu house was also plundered, and much of the remaining contents destroyed by rain.

495. Cultural sites seemed to have been damaged at random. On first inspection, the Faylakah archaeological site appears to have survived unscathed, but further investigation will be necessary. However, three historic structures in Kuwait City were heavily damaged. The Al-Maqsab Gate was completely demolished, reportedly by a large vehicle ramming it from three different directions. The oldest buildings in the old Kuwait City souk were partially pulled down during the final weeks of the occupation. The extensive damage done has destroyed the roofs and upper floors of all structures. The old Museum building (the Al-Jaber Palace) has also had its roof and part of its walls blown off or burned.

496. Over all, the losses in the cultural area are immense—not just for Kuwait, but also for the Islamic world and the world as a whole. Much of the loss is of priceless heritage objects and materials. Tragically, the Museum's complete record of items in its possession was destroyed by fire. However, at the time of the suspension of hostilities, the Iraqi Government indicated to the United Nations that the cultural items would be returned. The Kuwait Government has given the mission a partial list of the archaeological objects that had been held by the Museum. This has been handed to UNESCO so that it can take action to prevent the acquisition of these objects by other museums. Published bibliographies of the Central Library have also been received.

497. Other actions to be taken include restoring the Museum's buildings and interiors and replacing furniture and equipment. The damaged historical buildings pose a special problem. If they have been well-documented, they can be rebuilt in their old form. Their restoration cost, however, will be at least two to three times the cost of typical modern structures.

C) *INFORMATION*

Situation before 2 August 1990

498. Kuwait's radio and television services had in recent years undergone a modernization of equipment and had boosted transmission to cover not only Kuwait but also most Gulf States, and in the case of Radio Kuwait, as far afield as the Americas, Australia, the Far East and South-East Asia.

499. Radio Kuwait has been in existence for almost 40 years. Prior to the invasion, it transmitted programmes in four languages for 63 hours daily, covering primarily the Gulf region, but with special programmes reaching most parts of the world. It had a number of powerful transmitters ranging from 250 kilowatts to 750 kilowatts. The main transmitting station was located at Kabd, with two smaller ones at Maqwa and Jaiwan. It also had four fully equipped mobile broadcasting stations.

500. Kuwaiti Television was inaugurated in 1957. Prior to the Iraqi invasion, it reached most of the Gulf States, with two channels broadcasting 90 hours weekly. Some 80 per cent of programmes were locally produced and 20 per cent were foreign. It had four major fully equipped modern production studios and three broadcasting studios. The main transmission stations were at Mutla, Faylakah and Rawdhatayn. It also had seven mobile transmitting stations.

501. The Ministry of Information was also a driving force in the up-and-coming publishing industry of Kuwait. The government press put out at least two important journals—the weekly *Huna Al-Kuwait*, the official gazette (*Al-Kuwait Al-Youm*) and the monthly *Al-Arabi*, which had a regional circulation of 350,000 copies. In addition, it published textbooks and monographs on poetry, politics and other subjects. Production of these materials was largely carried out in the Ministry's own printing plant, which was in the process of modernization. New printing equipment had arrived but had not yet been uncrated.

502. In addition, prior to the Iraqi occupation, Kuwait had one of the most thriving private presses in the Arab world. Periodical titles covered popular subjects, but also included professional journals. Seven daily newspapers were published, several of which had an international readership.

Assessment of damage

503. A visit to the Kabd short-wave transmitting station showed that the buildings have been damaged. The remains of a number of 500-kilowatt transmitters and one 250-kilowatt transmitter were seen. The antenna network has also been damaged. The Kuwaiti authorities informed the mission that four new 500-kilowatt transmitters, which had recently been installed in the station, had been dismantled and carried away by the occupation forces. The cost of replacing the equipment will be high.

504. The building housing the Kabd medium-wave transmitting station has also been destroyed, and its transmitters, power-generating station, and two of the station's antennas have sustained severe damage.

505. The mission also visited the Maqwa transmitting station. The building was found to be severely damaged. Equipment has been looted. According to the Ministry, their transmitters were dismantled and stolen.

506. The transmitting station at Jaiwan has sustained minor damage to the building, as well as to its office furniture and equipment. No damage appears to have been sustained by the medium-wave transmitter or by the microwave unit and antennas.

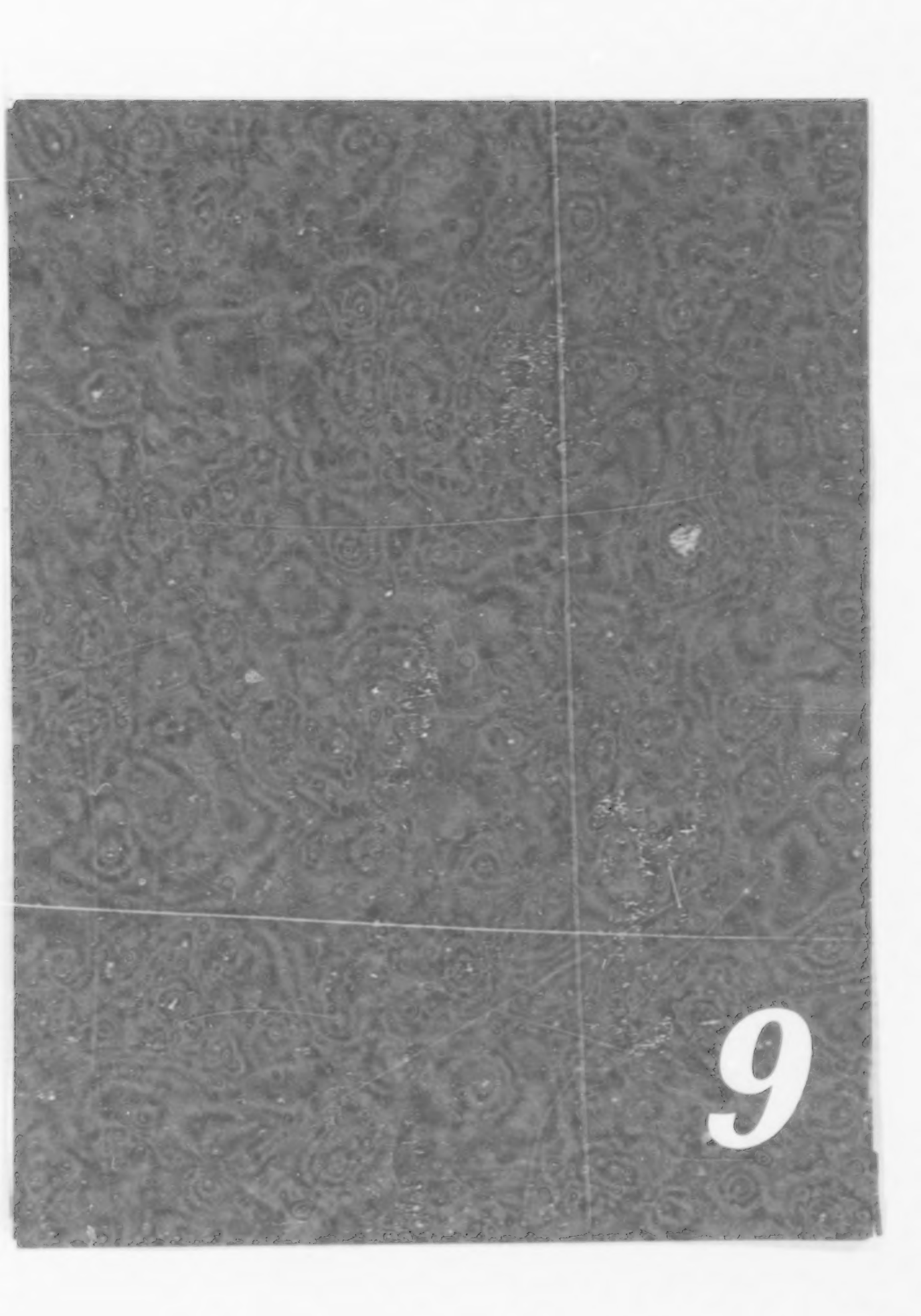
507. The mission also visited the Ministry of Information complex in Kuwait City to inspect damage to the building as well as to the radio studios. The mission inspected the offices of the Minister and his top aides housed on two floors of the building and found that they had been damaged by fire. However, the fire has not affected the rest of the building, and the structure as a whole is sound. Visiting the radio studios, the mission found that there was evidence of most equipment having been removed and of vandalism and ransacking.

508. Television broadcasting has been particularly affected by looting and vandalism. The Mutla transmitting station, together with an earlier-built neighbouring back-up station, has been completely destroyed.

509. At Faylakah, the mission found that the old and new buildings have also been destroyed. It was also informed that much of the equipment has been dismantled and removed. The main transmission tower has been damaged in several places.

510. At the television studios housed in the Ministry complex, the mission saw evidence of most of the equipment having been removed, while that which remains has been damaged. A visit to the television video libraries revealed that, apart from a few large reels of documentary films, all of the 45,000 video tapes consisting of Arabic and non-Arabic programmes that the library was said to have contained have been removed. The Ministry of Information has assessed the total cost of rehabilitation and replacement of equipment of radio and television facilities, including the cost of engineering services, at KD 188 million. However, in the view of the mission, a figure of approximately $500 million is considered reasonable to cover the costs of damages and losses sustained by the information sector as a whole.

511. The functioning of the Kuwaiti press has been completely disrupted. Printing presses have been removed or damaged to the point of being unusable. The few Kuwaiti newspapers available at the time of the mission were being printed out of the country.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... CONSIDERABLE QUANTITIES OF MODERN MACHINERY AND EQUIPMENT WERE DISMANTLED AND REMOVED BY TRUCK TO IRAQ. STATE-OF-THE-ART PLANTS WERE THE PRIMARY TARGET OF THIS SYSTEMATIC LOOTING ... THIS PLANNED ACQUISITION OF BOOTY WAS ACCOMPANIED BY SMALLER-SCALE, BUT WIDESPREAD, PILLAGE BY IRAQI TROOPS.

9 OTHER ECONOMIC ACTIVITIES: BANKING, COMMERCE AND MANUFACTURING

BANKING

Situation before 2 August 1990

[illegible]

Assessment of damage

[illegible]

COMMERCE

Situation before 2 August 1990

[illegible]

Assessment of damage

[illegible]

establishments were of a size between 8 and 24 square metres and were located in concrete buildings. Metal doors, screens and windows had been broken down, and store counters and shelves torn out and emptied. In many cases, fire had gutted the building and caused major structural damage.

520. Other commercial areas examined by the mission in six different towns—Abu Halifa, Al Ahmadi, Fahaheel, Jahrah, Riqqa and Salabikha—show a similar pattern. In Jahrah, which had a population of over 120,000, the commercial centre suffered heavy losses. Over 200 businesses were sacked. Although structural damage was very slight, many stores were gutted. The loss of inventories and often of furnishings was virtually total. In Al Ahmadi, a town south of the capital with about 80,000 people, 80 small shops and a medium-sized supermarket suffered extensive damage through looting and vandalism. The same is true for a large number of smaller commercial centres with half a dozen or more shops each in villages along the coast.

521. Many warehouses inspected by the mission in the industrial area of Kuwait City along the Fourth Ring Road, which stored goods such as electronics, spare parts, construction materials and foodstuffs, were ransacked and emptied by the occupation forces. There is every indication that the same happened to warehouses and stockyards in other locations. This was partly confirmed by aerial survey and select visits on the ground. Automobile dealers were also severely affected. Vehicles—particularly new or expensive ones—were removed from showrooms and dealer premises while many others were stripped of their parts.

522. For numerous large-, medium- and small-sized commercial firms, losses amount to 50 to 100 per cent of the merchandise stored there on 1 August 1990. The total value of the merchandise removed from shops, stores, stockyards and warehouses was reported to exceed $300 million in some cases.

523. The revival of commercial activities can only be gradual and will undoubtedly take a long time. Records of purchases on credit have been lost. A large number of debtors remain out of the country. Funds will be required for refurbishing shops, repairing warehouses and rebuilding and it will take time to re-establish the trader-customer relationship current before the occupation.

MANUFACTURING

Situation before 2 August 1990

524. Although its relative importance was dwarfed by the size of the oil industry, the manufacturing sector in Kuwait was an expanding, vibrant activity in mid-1990. The diversification strategy of the Government had encouraged numerous investors and in the 1980s many new lines of activity came into operation. Manufacturing had entered a new phase with large investments in modern machinery and management and the quest for new markets, particularly the Gulf area and the rest of the Middle East. Excluding oil refining, about 8 per cent of the labour force was engaged in manufacturing. By early 1990 there were more than 4,000 manufacturing establishments, mostly in the textile, construction and food and beverage industries. Annual exports (excluding the petrochemical industry) exceeded $500 million at the time of the invasion. There were four principal industrial centres located at Shuaiba, Shuwaikh, Sulibiya and Shuaiba—where the majority of the medium-sized and large enterprises were located.

Assessment of damage

525. The occupation of the country produced a major disruption in the manufacturing sector. In the first weeks of the occupation and progressively thereafter considerable quantities of modern machinery and equipment, particularly those brought for newly constructed factories, were dismantled and removed by truck to Iraq. State-of-the-art plants, large and small, were the primary target of this systematic looting of capital assets which was often accompanied by removal of inventories of raw materials, spare parts and finished goods. This planned acquisition of booty was accompanied by smaller-scale, but widespread, pillage by Iraqi troops.

526. The mission visited the four major industrial centres and inspected 24 manufacturing plants ranging in size from 1,500 to 80,000 square metres. Time constraints did not allow for a more detailed examination or a wider sampling and the assessment by the mission cannot claim to be definitive. However, even a cursory examination of other plants in these centres, together with an aerial inspection of local representative, indicated that very few had escaped damage or suffered only minor loss. It was not possible for the mission to attempt a detailed quantification of damage at each plant visited since the majority of them belonged to the private sector and most owners had fled the country.

527. Ransacking and, in most cases, vandalism were evident in offices in the 24 plants inspected. Equipment had been removed, safety vaults forced open and contents pertained, cabinet files ripped and documents scattered and torn. Furniture had generally been smashed or thrown in corridors and yards.

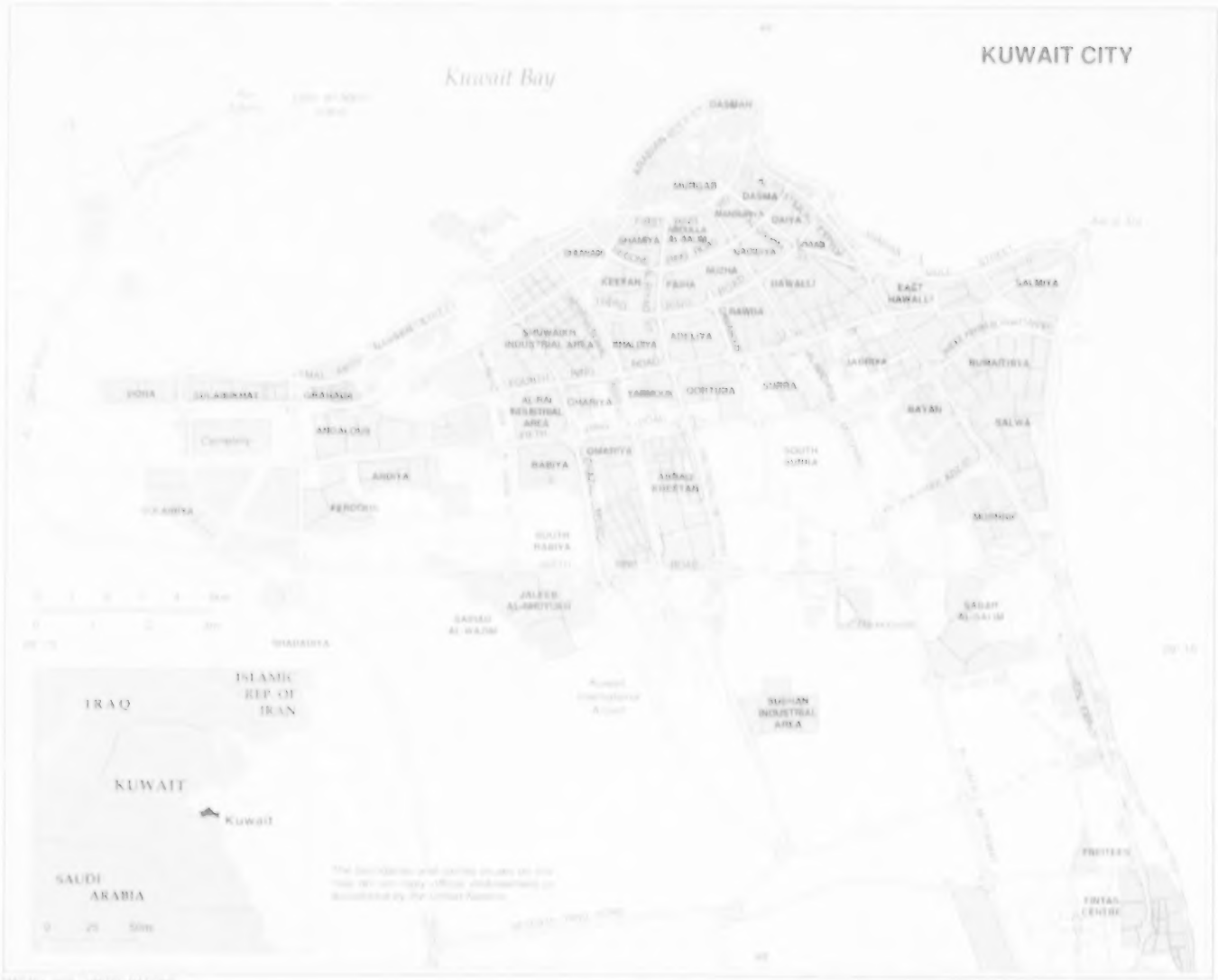
528. In 11 small plants there was moderate to heavy equipment loss although damage to the structures was in general very light. There were two cases of more serious damage: a fibreglass boat construction plant and a filter producing factory, where explosives had caused roofs to sink and steel supports to collapse. Inventory loss of raw materials and spare parts and finished products ranged from marginal to complete loss. One spark-plug factory was a complete write-off.

529. Structural damage was light in medium-sized plants, with the exception of a fishing company whose main building was severely affected by explosives and fire. Loss of equipment can be qualified as heavy on the average as can that of inventories. Among the seven largest-sized plants inspected, major structural damage was evident in the building of a dairy company that will have to

be largely rebuilt. In the others damage was slight to moderate. Removal of machinery and looting of equipment together with losses in inventory were severe. Spare parts and raw materials suffered greater depletion than finished products.

530. As has been stated, a detailed quantification is not possible but overall losses in the sector have been considerable. In the absence of supporting data an assessment can be made only once the owners return. The loss has not been confined to that of theft and damage of equipment, removal of inventory and ransacking of offices. The staggering loss of output must also be taken into account since production in a considerable number of the large factories came to a halt immediately after the invasion of the country.

531. Resumption of most of these activities will take considerable time. Each place presents a particular problem, in some cases many problems combined. Ordnance has to be cleared; electricity and water have to be restored; buildings and structures have to be rebuilt and equipment has to be replaced. Repairs would need to be extensive. Even if immediate funds are found to order equipment, their delivery will take time. Raw materials and spares will have to be replenished. And the technical staff to operate the plants will have to be found.


KUWAIT CITY
Kuwait Bay
DASMAN
MURGAB
DASMA
DAIYA
SHAMIYA
NAQRA
SHUHADA
KEIFAN
FAIHA
HAWALLI
EAST HAWALLI
SALMIYA
HAWALLI
SHUWAIKH INDUSTRIAL AREA
SHALIYA
ADELIYA
JABRIYA
BNEID AL-QAR
SURRA
QORTUBA
YARMOUK
CHARYA
AL-RAI INDUSTRIAL AREA
BAYAN
SALWA
MISHREF
RABIYA
OMARIYA
AHMADI KHEETAN
SOUTH SURRA
SOUTH RABIYA
JALEEB AL-SHUYOUKH
SABAH AL-SALEM
MUBARAK AL-KABEER PORT
SHUAIBA
SHUAIBA INDUSTRIAL AREA
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ISLAMIC REP. OF IRAN
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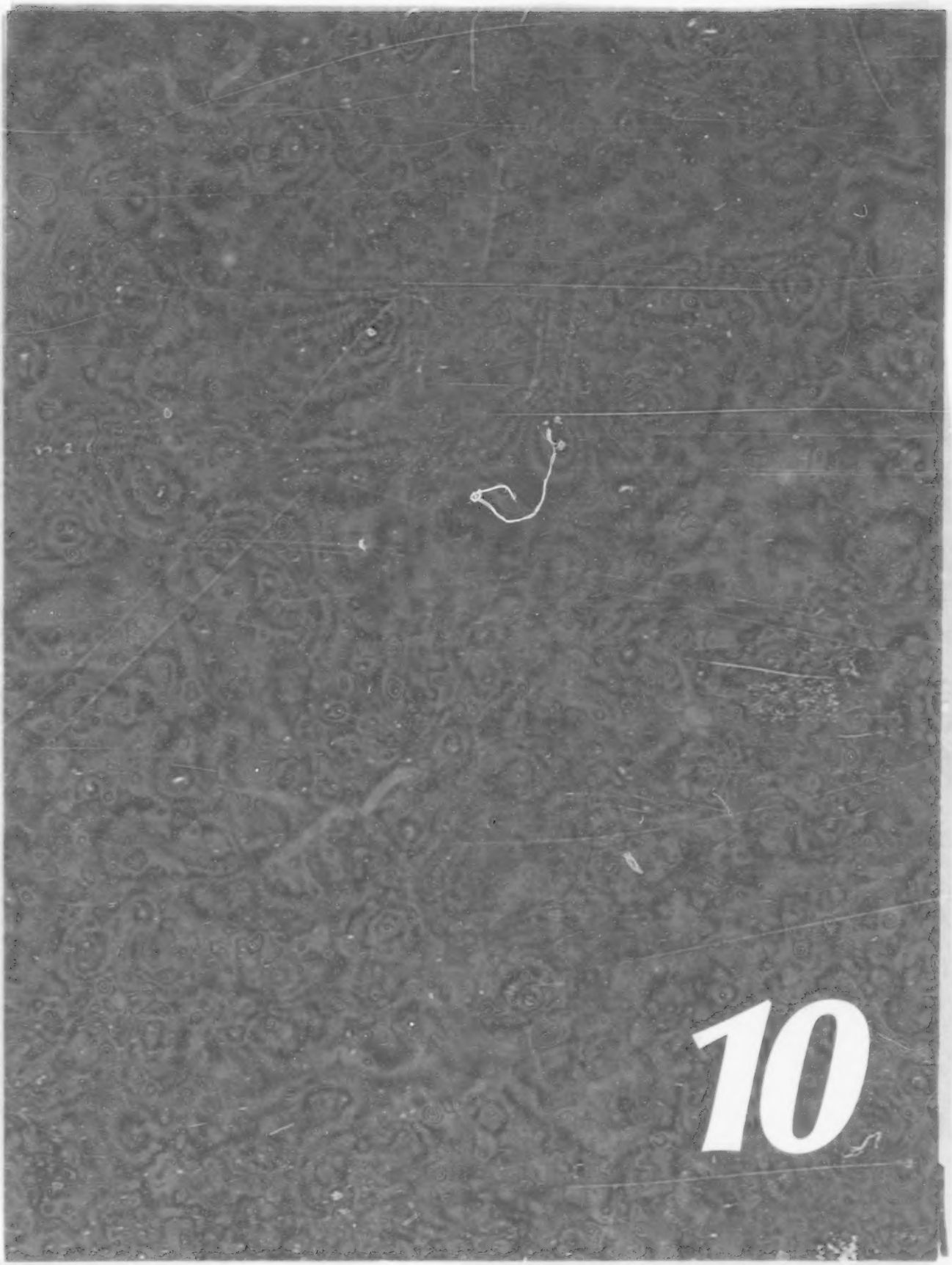
MAP 14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CERTAINLY, THE MOST LASTING ENVIRONMENTAL PROBLEM FACING KUWAIT WILL BE THAT OF MINES AND OTHER UNEXPLODED ORDNANCE. IT WILL HIT AT THE SOCIAL BEHAVIOURAL PATTERNS OF ALL RESIDENTS OF KUWAIT AS WELL AS THE NOMADIC PEOPLE WHO SEASONALLY MOVE ACROSS KUWAIT'S BORDERS. THE DANGER POSED TO LIFE WILL CONTINUE FOR A LONG TIME TO COME.

10 CONCLUDING OBSERVATIONS

532. The present report has attempted to present a broad assessment of damage and losses inflicted on Kuwait based primarily on personal inspection and survey by members of the mission, and, in the absence of relevant records and data, on oral and written information provided to them. The mission reached Kuwait less than three weeks after the withdrawal of Iraq's occupation forces. Preceding sections of the present report have detailed the constraints with which it was faced. The mission is aware of the fact that its assessment is not exhaustive. However, it is hoped that its broad findings, arrived at through selective sampling in some sectors and random sampling in others, will provide a representative illustration of the nature and scope of the damage inflicted upon the economy of Kuwait.

533. Today, Kuwait struggles to recover from the consequences of its occupation by Iraq, which have left no section of its population or sector of its economy untouched. Innocent lives have been lost and suffering caused to countless others. The damage inflicted on the economy almost seems incalculable. Over two thirds of the Kuwaiti population was obliged to flee the country and is now widely dispersed, while nearly a million foreign technicians and workers who were the mainstay of the service sector have been forced to abandon their jobs and return to their countries. The oil industry, which is the nerve centre of the economy, is in shambles, while other vital sectors of the infrastructure have been systematically sabotaged and plundered.

534. When the mission arrived in Kuwait, public utilities were not functioning and basic social services were non-existent. The awesome dimensions of the damage inflicted on the country, together with the efforts needed to repair and reconstruct the wrecked infrastructure, had imparted a feeling of helplessness and despair. The Government and people were faced with a situation of compelling and yet competing priorities. The most visible, and undoubtedly the most significant, of the sectors affected by the occupation was the oil industry.

535. The unprecedented catastrophe of hundreds of burning and gushing oil wells and the consequent pollution of the environment overshadow the damage sustained by the rest of the industry. In monetary terms the current situation represents a daily loss to Kuwait of between $40 million and as much as $120 million. It is only by the capping of these wells that it would be possible to bring the industry back into operation, particularly since the country's refineries and export facilities have not been entirely destroyed but rather strategically crippled. There is every hope that within two months local demand could be met from domestic oil production. What remains unknown is the condition of the oil reservoirs which it is strongly feared have been damaged.

536. At the time of the mission's departure from Kuwait and six weeks after the start of the oil fires, no one was in a position to define with certainty the composition of the fire emissions. No one can be complacent over the hundreds of burning oil wells that continue to scar the countryside, emitting dense black clouds of smoke that hover ominously over Kuwait—clouds that frequently blot out the sun, turning day into night and causing abnormally sharp drops in temperature. This would point to a serious gap in response mechanisms. It has precluded the mission from seeing very much about the resulting effect on human health and on ecosystems. To remedy this it would appear vitally necessary to establish an international emergency response service.

537. The oil-fire problem in Kuwait has also highlighted the need to consider environmental problems in the Gulf on a regional basis. The smoke plumes from the fires have cast their pall over many other Gulf States. Likewise, oil slicks originating in one country may move through the Gulf and affect the waters and coastlines of neighbouring countries. There is a need for cooperation in data and information exchange as well as in remedial management actions. The role of regional organizations such as the Regional Organization for the Protection of the Marine Environment cannot be overstressed.

538. Certainly, the most lasting environmental problem facing Kuwait will be that of mines and other unexploded ordnance. It will hit at the social behavioural patterns of all residents of Kuwait as well as the nomadic people who seasonally move across Kuwait's borders. The danger posed to life will continue for a long time to come.

539. Education has suffered across the board. A generation of children and youth have lost at least one school year and virtually every educational facility, public and private, has been ransacked, defiled and partly destroyed.